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CONTRIBUTIONS TO AMERICAN BOTANY. XV.

I. Some New Species of Plants of the United States, with Revisions of *LESQUERELLA* (Vesicaria) and of the North American Species of *DRABA*.

II. Some New Species of Mexican Plants, chiefly of Mr. C. G. Pringle's Collection in the Mountains of Chihuahua, in 1887.

III. Descriptions of some Plants of Guatemala.

By SERENO WATSON.

From the Proceedings of the American Academy of Arts and Sciences, Vol. XXIII.

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XVII.

CONTRIBUTIONS TO AMERICAN BOTANY.

By Sereno Watson.

Presented March 14, 1888.

1. *Some New Species of Plants of the United States, with revisions of* Lesquerella (Vesicaria) *and of the North American species of* Draba.

LESQUERELLA;* new genus of *Cruciferæ*. Petals spatulate to oblong-obovate, entire. Filaments filiform or rarely dilated: anthers

* The Old World genera of the *Vesicaria* and *Alyssum* group are variously understood by European botanists and are very troublesome. The species of *Vesicaria* upon which all are agreed (*V. utriculata*, *V. Græca* and *V. glabrescens*, the first being one of the two original species) have stout erect leafy stems from a suffrutescent base, glabrous, or pubescent below with appressed 2-parted or somewhat stellate hairs, with large Erysimum-like flowers, very large globose coriaceous pods, nerveless septum, and wing-margined seeds. This is the genus as it is generally accepted on the continent, though Boissier added an imperfectly known species which he considered as probably distinct. If it be thus limited, it is certain that we have no species that can be referred to it. Bentham & Hooker, however, added to it other species with globose pods, separating it (so far as Old World species are concerned) apparently upon that character alone from their *Alyssum*. These foreign species are (as Prof. Oliver informs me) *V. sinuata*, *Cretica*, *gnaphalodes*, *vestita*, and probably also *V. corymbosa*, though this is not included in Prof. Oliver's list. Of these, *V. gnaphalodes* and *V. vestita* are so far differentiated from both *Vesicaria* and *Alyssum* that Boissier referred them to distinct genera. *V. Cretica* is a peculiar suffruticose species with very large coriaceous pods and toothed filaments, usually made a section of *Alyssum*. *V. sinuata* and *V. corymbosa*, both referred to *Alyssum* by Boissier and others, are the two species which most resemble any of our own in habit, indumentum, the form and texture of the pod, etc. The species that are embraced in *Alyssum* as one polymorphous genus by Bentham & Hooker are separated from their *Vesicaria* upon the character of the more or less compressed pod, but also often have the filaments toothed or appendaged and the cells of the pod only 1- or 2-seeded. These are divided by Boissier and other prominent botanists into 4 or 5 genera, the question of the retention of which may be left to European botanists to determine. The American species differ from them all, more or

sagittate. Pods more or less turgid, round or ovate or short-oblong (often globose), with nerveless valves and a hyaline septum nerved

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less positively. In all our species there is a distinct nerve extending from the apex to the middle of the septum or beyond. The filaments are never toothed or appendaged; the petals are never narrowly unguiculate, and, except in one or two species, are yellow; the ovules are never solitary in the cells, and the pubescence is always more or less stellate or lepidote. Among foreign species the nerved septum is characteristic of the genus *Lobularia* (*Koniga*), as limited by the exclusion of *Ptilotrichum* and by the peculiar appressed 2-forked pubescence; and in these, in addition to the midvein, the septum is covered with a coarse network of veinlets which I have observed in none of ours, and its areolæ are straight and narrowly linear, to which our only approach is in *V. globosa*. *Physaria*, which is included by Bentham & Hooker in *Vesicaria*, is certainly to be separated, and the removal of the remaining American species is, in my opinion, justified by the characters. We, moreover, thus avoid completely the difficulties which beset the arrangement of the Old World genera, and leave the question of our own one that can be answered with comparative ease.

To the species that have hitherto been placed in *Vesicaria*, I would, therefore, now give the generic name *Lesquerella* (in preference to reviving *Lesquereuxia*, the former name of a genus now merged in *Siphonostegia*), in honor of our venerable and in every way worthy veteran palæontologist and bryologist, Leo Lesquereux. Our one flat-podded species that has been referred to *Alyssum* (*A. Lescurii*) appears to differ in no other respect than its less convex valves from a somewhat distinct group of species which can be separated, however, only as a section from the rest. I would arrange the known species of the genus as follows: —

§ 1. Alysmus. Not canescent or scarcely so, the pubescence loosely stellate. — Winter-annuals, the stems ascending or decumbent: filaments somewhat dilated at base: pods globose, or suborbicular and flattened (in n. 1); cells mostly 6- or 8-ovuled. Tennessee and Texas.

* Seeds margined: cauline leaves mostly auriculate: pods sessile.

+ Pods flattened (valves but slightly convex), strigose-hispid.

1. L. Lescurii. Slender, branching: leaves oblong-ovate or oblong, toothed, the cauline all auriculate: filaments abruptly dilated below: pods 2 or 3 lines long, orbicular to broadly elliptical; style not a line long; cells 4-ovuled; septum dense. — *Alyssum Lescurii*, Gray. Near Nashville, Tenn.

+ + Pods globose, glabrous.

2. L. grandiflora. Rather finely pubescent: lower leaves oblanceolate, sinuate or sinuate-pinnatifid, the upper oblong to oblong-lanceolate: petals obovate: filaments narrowed gradually above the base: pods suberect on divaricate pedicels; style a line long or less. — *V. grandiflora*, Hook. *V. brevistyla*, Torr. & Gray. Middle Texas, from the Gulf to Red River.

3. L. auriculata. More hirsute with spreading hairs: petals narrower: filaments abruptly and broadly dilated at base: pods slightly narrowed at base. — *V. auriculata*, Engelm. & Gray. San Felipe, Texas (*Lindheimer*).

from the apex to the middle, several- to many-seeded, sessile or stipitate; stigma flat-capitate, entire or lobed. Seeds rounded, flat, mar-

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* * Seeds immarginate; leaves not auriculate.

4. L. LASIOCARPA. Finely pubescent: leaves coarsely toothed or pinnatifid, oblanceolate to oblong: petals obovate: pods hirsute, sessile, the stout style half as long. — *V. lasiocarpa*, Hook. Ringgold Barracks, Texas; Tamaulipas, Mexico.

5. L. DENSIFLORA. Finely pubescent and somewhat canescent: leaves entire or sparingly repand, oblanceolate: petals broadly spatulate: fruiting raceme often short and crowded; pods glabrous, substipitate, the very slender style as long. — *V. densiflora*, Gray. Central Texas.

§ 2. LESQUERELLA, proper. Canescent throughout with fine appressed and often compact stellate pubescence or lepidote: leaves not auriculate-clasping: filaments filiform or linear-subulate: seeds immarginate.

* Ovary and pod finely pubescent, sessile or very nearly so.

+ Pods ovate or oblong or oblong-ovate: biennials or perennials with simple stems.

++ Pods ovate to oblong-ovate, acute or acutish, somewhat compressed (the valves less convex toward the apex), erect on spreading or ascending pedicels: pubescence compact and rarely distinctly stellate. Western species.

6. L. OCCIDENTALIS. Caudex usually simple: leaves oblanceolate, coarsely sinuate-dentate, the cauline spatulate, entire: pods oval, acutish, 3 or 4 lines long; style 2 lines long; cells 4-ovuled. — *V. occidentalis*, Watson, Proc. Am. Acad. 20. 353. Oregon and Northern California.

7. L. KINGII. Leaves entire, the lower ovate, petiolate, the cauline spatulate: pods oblong-obovate, acute, 2 or 3 lines long; style a line long; cells 2–4-ovuled. — *V. Kingii*, Watson, l. c. Northern Nevada; Lassen's Peak.

8. L. ALPINA. Dwarf, usually cespitose and multicipital; stems slender: leaves entire, narrow, linear to linear-oblanceolate: petals spatulate with a broad base: pods oblong-ovate, acute, compressed, 2 lines long; style about as long; cells 2–4-ovuled; septum sometimes perforate. — *V. alpina*, Nutt. Cypress Hills, Canada, to Colorado and Montana.

Var. INTERMEDIA. Stems stouter: flowers larger, the oblong sepals 2½ to 4 lines long, and the petals more narrowly spatulate: pods ovate-elliptical; cells 4-ovuled. — *V. alpina*, Gray, Pl. Fendl. 9. New Mexico to southern Colorado and Utah.

9. L. ARIZONICA. See page 254.

++ ++ Pods oblong or oblong-ovate, not compressed or slightly so, erect on usually divaricate curved pedicels. Rocky Mountains.

10. L. MONTANA. Pubescence often evidently stellate; caudex rarely branched: leaves oblanceolate, the radical often subovate on slender petioles and obscurely toothed: petals spatulate: pods 3 lines long, with long slender style; cells 4–8-ovuled. — *V. montana*, Gray. Northern Colorado and southern Wyoming, near and on the mountains.

11. L. MONTEVIDENSIS. Compactly lepidote: leaves narrowly to linear-oblanceolate, entire or repandly dentate: flowers large: pods elliptical, 3 lines

ginless or rarely narrowly margined. Cotyledons accumbent. — Low caulescent annuals or perennials, with stellate often dense or white-

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long, the style a line long; cells 4-ovuled. — *V. Montevidensis*, Eichl. Fl. Bras. 13[1]. 302, t. 67, f. 2. Brazil; the only South American species.

* * * Pods elliptical, somewhat obcompressed, acute or obtuse, erect on spreading pedicels: pubescence compactly lepidote. Arizona and Mexico. (Abnormal species.)

12. L. (?) WARDII. See page 255.

13. L. (?) CINEREA. See page 255.

14. L. (?) ARGENTEA. Leaves oblanceolate to spatulate, toothed or entire: pods elliptical, obtuse, 3 lines long; style a line long; cells 6–8-ovuled. — *V. argentea*, Schauer, Linnæa, 20. 720. Mexico.

* * Pods globose, or nearly so, and obtuse (acutish in n. 15).

* Annual or sometimes biennial. Southern.

15. L. GLOMOSA. Pubescence dense, evidently stellate; stems slender, often branched: leaves oblong-spatulate to linear-oblanceolate above, entire or sparingly toothed: pods on wide-spreading pedicels, a line in diameter; style longer; cells 2-ovuled. — *V. glomosa*, Desv. *V. Shortii*, Torr. Tennessee to eastern Missouri.

16. L. BERLANDIERI. Pubescence often somewhat sparse; stems slender, often branched: leaves ovate-lanceolate to oblanceolate, lyrately pinnatifid below, repandly toothed above: pods globose or ellipsoidal, 1½ to 2½ lines long; style as long; cells 4–6-ovuled. — *V. Berlandieri*, Gray in herb. Near Matamoras and at San Fernando, Tamaulipas (*Berlandier*).

17. L. PALMERI. See page 255.

* Biennial or sometimes perennial. Northern.

18. L. LUDOVICIANA. Pubescence evidently stellate or compact below; caudex and stems usually simple: leaves narrowly oblanceolate to linear, mostly entire: pods pendulous on the recurved pedicels, 1½ to 2½ lines long; style about as long; cells 4–6-ovuled. — *V. Ludoviciana*, DC. Minnesota and central Dakota to Nebraska and northeastern Colorado; northern Arizona (*Palmer*).

Var. ARENOSA. Low and very slender, with shorter narrow leaves. — *V. arenosa*, Rich. *V. arctica*, Hook. Bot. Mag. t. 2882. Saskatchewan region.

19. L. DOUGLASII. See page 255.

* * Ovary and pod glabrous (or pubescent in nos. 27 and 31), not at all compressed.

* Pods oblong or pyriform, substipitate, on long ascending pedicels. Arkansan annuals.

20. L. REPANDA. Pubescence finely and usually sparingly lepidote-stellate: leaves from lyrately pinnatifid to linear-spatulate and entire: ovary oblong, acutish, somewhat narrowed to a very short stipe; style about as long; cells 4-ovuled (mature fruit unknown). — *V. repanda*, Nutt. Banks of Red River (*Leavenworth*).

21. L. NUTTALLII. Like the last, but radical leaves and flowers unknown: pods broadly pyriform, somewhat constricted above the abrupt base, 2½ lines

lepidote pubescence, and entire or repandly toothed leaves. Flowers yellow (white or rose-colored in one or two species). Pods much

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long, shortly stipitate; style 1 or 2 lines long; cells 6–8-ovuled. — *V. Nuttallii*, Torr. & Gray. Prairies of Red River (*Leavenworth*).

+ + Pods globose. Southwestern, except n. 31.

++ Pods pendent on recurved pedicels, sessile or scarcely stipitate.

= Flowers white or rose-colored.

22. L. PURPUREA. Biennial or perennial, the caudex simple or branched; pubescence fine, scattered, or more or less compact on the lower leaves: leaves oblanceolate, the lower often coarsely repand or subpinnatifid: pods rarely ascending, 1½ to 3 lines broad; style a line long or less; cells 2–6-ovuled. — *V. purpurea*, Gray. Western Texas to Arizona and northern Mexico.

23. L. PALLIDA. Annual, finely and rather sparingly scurfy: leaves oblanceolate, repand: pods shortly stipitate, 2 lines broad; style a line long; cells 6-ovuled. — *V. pallida*, Nutt. San Augustin, eastern Texas (*Leavenworth*). Perhaps a form of the next.

= = Flowers yellow.

24. L. RECURVATA. Annual, thinly pubescent: leaves entire, oblong-oblanceolate or -spatulate, short: pods sessile, 1 or 2 lines broad; style about as long; cells 2–4-ovuled. — *V. recurvata*, Engelm. *V. angustifolia*, Scheele, in part. Central Texas.

++ ++ Pods suberect on ascending or curved pedicels.

= Annual (rarely biennial?), usually branched: pods often stipitate. (Very closely allied species.)

25. L. LINDHEIMERI. Pubescence very fine or compactly lepidote; stems erect or ascending: leaves oblong- to narrowly oblanceolate, repand or dentate: pods 2 lines broad; stipe short; style rather shorter than the pod; cells 6–8-ovuled. — *V. Lindheimeri*, Gray. Texas.

26. L. GRACILIS. Pubescence very fine, usually scanty; stems slender and usually lax: leaves narrowly oblanceolate, entire or sparingly repand: pods stipitate, 1½ or 2 lines broad, on slender often elongated pedicels; style nearly or quite as long; cells 4–6-ovuled. — *V. gracilis*, Hook. *V. polyantha*, Schlecht. Central Texas to Kansas.

Var. SESSILIS. Pods sessile. — *V. angustifolia*, Gray, Pl. Wright. 2. 13, in part. Texas (848 Wright; 326 Lindheimer?).

27. L. GORDONI. Pubescence somewhat coarser; often low: leaves linear-oblanceolate, entire or rarely repand: pods stipitate, 2 lines broad; style shorter; cells 6-ovuled. — *V. Gordoni*, Gray. Extreme western Texas to New Mexico and Arizona. Very near the last.

Var. SESSILIS. Pods sessile or nearly so and often pubescent. — *V. angustifolia*, Gray, l. c. in part. Same range.

28. L. ANGUSTIFOLIA. Finely lepidote: lower leaves lyrate-pinnatifid, the cauline narrowly linear and petiolate: pods sessile, 2 to 2½ lines broad; style somewhat shorter; cells 2-ovuled. — *V. angustifolia*, Nutt. Prairies of Red River, Arkansas (*Leavenworth, Nuttall*).

compressed in one species, and somewhat so toward the apex in a few others; obcompressed in some doubtful species. *Vesicaria*, Auct., as to American species, excluding *Physaria*.

Lesquerella Arizonica. Dwarf densely cespitose multicipital perennial, with compact finely stellate or lepidote pubescence: leaves narrowly oblanceolate, entire: flowers rather large, the sepals 2½ lines long or less; petals with a very broad undulate claw, rounded above: pods broadly ovate, somewhat compressed, acute, pubescent, sessile, the cells 4-ovuled; style a line long or more. — Arizona; near Prescott (16 *Palmer*, 1876), near Williams Station (4188 *Lemmon*), at Peach Springs (4177 *Lemmon*, 64 *Jones*), and at Mokiak Pass (43 *Palmer*, 1877).

= = Biennial or usually perennial (often fruiting the first year): pods sessile, or nearly so, on ascending or spreading pedicels.

∽ Pubescence evidently stellate.

29. L. Engelmanni. Pubescence dense; caudex usually much branched; stems often dwarf, usually simple: leaves ovate and petiolate to linear-oblanceolate, or the upper linear-spatulate, entire or slightly repand: raceme usually short: pods substipitate, 3 lines broad; style as long; cells 6–8-ovuled. — *V. Engelmanni*, Gray. Central Texas to western Kansas and southeastern Colorado.

30. L. argyrea. Pubescence more or less dense; caudex often simple and apparently annual; leafy stems decumbent or procumbent: leaves ovate and petiolate to narrowly oblanceolate, entire or repand; petals often turning purple: pods sessile, in a long raceme, 2 to 2½ lines broad; style as long or shorter; cells 6–10-ovuled. — *V. argyrea*, Gray. Southwestern Texas and northeastern Mexico.

∽ ∽ Pubescence compactly lepidote, rarely evidently stellate.

31. L. arctica. Caudex and stems usually simple, low: leaves spatulate or narrowly oblanceolate, entire: pods 2½ to 3 lines broad; style a line long or less; cells 6-ovuled; septum perforate. — *V. arctica*, Richards. West Greenland and Arctic Coast to the Mackenzie River.

Var. Pursh. Pod somewhat pubescent; septum complete. — Anticosti Island (*Shepherd, Macoun*); "Canada" (*Pursh*, in Herb. Torr.).

32. L. Fendleri. Usually evidently perennial and caudex much branched, often dwarf; stems simple: leaves numerous, entire, mostly narrowly linear-oblanceolate: pods in a dense usually short raceme, 2 or 3 lines long, sometimes ellipsoidal or acutish; style usually as long; cells 10–16-ovuled. — *V. Fendleri* and *V. stenophylla*, Gray. Western Texas and southern Colorado to Arizona and northern Mexico.

33. L. Schaffneri. Caudex simple; stems ascending or decumbent: leaves linear- to oblong-oblanceolate or spatulate, entire or repand: petals turning purple: pods subovate, 1½ to 2½ lines long; style half as long; cells 6-ovuled. — *V. Schaffneri*, Watson, Proc. Am. Acad. 17. 320. San Luis Potosi, Mexico.

LESQUERELLA PALMERI. Pubescence dense, stellate-lepidote; caudex simple, apparently biennial, the simple stems a foot high or more: basal leaves narrowly oblanceolate, repand, the cauline narrower and mostly entire: petals spatulate, 3 lines long: pods pubescent, ovate-globose to broadly ellipsoidal, erect on long spreading or ascending pedicels; style as long as the pod; cells 2–4-ovuled. — Arizona (*Palmer*, 1872; cult. at Washington); Topo cañon, Lower California (*C. R. Orcutt*, 1884).

LESQUERELLA DOUGLASII. Resembling *L. Ludoviciana*, but the pods smaller, obovate and very obtuse, erect upon the spreading pedicels, and the cells only 2-ovuled: lower leaves sometimes ovate upon a narrow petiole. — *Vesicaria Ludoviciana*, Hook. Fl. Bor.-Am. 1. 48, as to habitat; Torr. Bot. Wilkes, 232. On the Columbia River east of the Cascade Mountains (*Wilkes, Lyall, Suksdorf*); Wallowa Mountains, eastern Oregon (*Cusick*). First collected by Douglas, but locality not given.

LESQUERELLA (?) WARDII. A procumbent and very compactly lepidote biennial (?), with short stems; radical leaves round-ovate on slender petioles, the cauline short, linear- to obovate-spatulate: pods elliptical, somewhat obcompressed, acute or acutish, the valves very convex, $1\frac{1}{2}$ to $2\frac{1}{2}$ lines long, erect on short spreading pedicels; septum oblong; cells 2–4-ovuled; style a line long or more: seeds somewhat turgid and irregular, the long radicle more or less curved to one side. — Arizona, on the Aquarius Plateau, at 11,000 feet altitude (*L. F. Ward*, 1875). An abnormal species.

LESQUERELLA (?) CINEREA. Like the last in habit: sepals narrow, 3 lines long; petals 4 lines long, with a very broad undulate claw somewhat contracted below the rounded blade: ovary elliptical, acute, obcompressed; cells 12-ovuled (mature fruit unknown). — Arizona, locality not given (*Palmer*, 1869). Like the last abnormal in its obcompressed pod, and perhaps to be transferred, when better known, to *Physaria*.

DRABA * SUBSESSILIS. Perennial, dwarf, densely cespitose, the

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* The North American species of *Draba*, exclusive of the Mexican, are the following: —

§ 1. EROPHILA, Lindbl. Petals bifid. — A stellate-pubescent scapose winter-annual, with coarsely toothed or entire leaves, white flowers and many-seeded round-oval to oblong pods. *Erophila*, DC.

1. D. VERNA, Linn. — *E. vulgaris, Americana*, etc., DC. Naturalized from the Atlantic to Minnesota and Missouri, and at Vancouver, W. T. Identical with European forms.

numerous short branches of the caudex forming a broad mat, scapose, finely stellate-pubescent: leaves very small, oblong, obtuse, not ciliate:

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§ 2. HETERODRABA. Pedicels reflexed to one side. Seeds hispidulous. — A stellate-pubescent short-caulescent and branching winter-annual, with coarsely toothed or entire leaves, white flowers and round-oval 8–12-seeded pods. *Heterodraba*, Greene, Bull. Calif. Acad. 1. 72.

2. D. UNILATERALIS, Jones. Branches elongated, lax: leaves cuneate-obovate to oblanceolate: racemes usually nearly sessile: flowers very small: pods somewhat twisted, on short pedicels. — Torr. Bull. 9. 124. Colusa County, California, to Lower California.

§ 3. DRABELLA, DC. Stellate-pubescent or more or less villous short-caulescent and more or less leafy winter-annuals (scapose and rarely biennial in n. 12), with ascending or spreading pedicels, entire or emarginate petals and smooth seeds.

* Early spring species of valleys and hillsides, or southern.

+ Leaves entire: flowers small, white: pedicels clustered or approximate.

3. D. CAROLINIANA, Walt. Branches often decumbent, the peduncles scape-like: leaves loosely stellate-pubescent: pods linear, glabrous. — New England to Minnesota, Arkansas and Georgia; Umatilla, Oregon.

Var. MICRANTHA, Gray. Pods subappressed-hispid. — Illinois to Texas, New Mexico and Washington Territory.

+ + Leaves coarsely few-toothed or entire: pedicels more remotely racemose.

++ Flowers small, white: stigma sessile or nearly so.

4. D. CUNEIFOLIA, Nutt. Loosely stellate-pubescent: leaves cuneate-obovate to oblanceolate: raceme pedunculate: pods linear-oblong, usually acutish, shortly subappressed-hispid, 16–50-seeded. — *D. filicaulis*, Scheele, Linnæa, 21. 583. Kentucky to Alabama and west to southern California.

Var. INTEGRIFOLIA. Small (1 or 2 inches high) with small and mostly entire leaves, and glabrous pods on pedicels about a line long. — Coast Ranges of southern California.

Var. PLATYCARPA. Pods oblong-oval, usually obtuse. — *D. platycarpa*, Torr. & Gray, Fl. 1. 108. *D. Ræmeriana*, Scheele, l. c. Texas to Arizona. Differing only in the form of the pods.

5. D. SONORÆ, Greene. Racemes usually nearly sessile and flowers very small: pods finely stellate-pubescent, narrowly oblong, 16–20-seeded, on short pedicels. — Bull. Calif. Acad. 2. 59. Southern California and Arizona to Sonora. The pubescence of the pods is the most constant character distinguishing this species from the last.

6. D. BRACHYCARPA, Nutt. Stellate pubescence somewhat appressed: leaves ovate to ovate-oblong, the cauline oblong-lanceolate or linear: peduncles short: flowers very small: pods narrowly oblong, glabrous, 1 or 2 lines long, 10–12-seeded. — Virginia to Georgia, Louisiana and Missouri; Roseberg, Oregon.

++ ++ Flowers yellow, large: style slender.

7. D. MOGOLLONICA, Greene. A span high, villous or loosely stellate-pubescent below: leaves mostly basal, oblanceolate, stellate-pubescent: pods linear or oblong, glabrous, 4 to 8 lines long. — Coult. Bot. Gaz. 6. 157. Mountains of New Mexico (*Rusby, Greene*).

peduncles very short; fruiting raceme about an inch long and with the pod sparsely pubescent: flowers small, white, the petals scarcely longer

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8. D. (?) ASPRELLA, Greene. Pubescent with spreading simple or forked hairs; scape-like peduncles one to several: filaments dilated downward: pods oblong-elliptical, somewhat turgid, hispid, on divaricate pedicels; style slender. — Torr. Bull. 9. 125. Arizona. A doubtful species by reason of the turgid pod and dilated filaments. Mature fruit has not been seen.

* * High mountain or northern species: leaves entire or few-toothed: flowers small, yellow, becoming whitish: stigma sessile.

9. D. NEMOROSA, Linn. Usually branching below, loosely stellate-pubescent: leaves rarely rosulate, ovate to oblong-lanceolate: racemes nearly sessile: pods narrowly oblong, or oblong-elliptical, acutish, minutely pubescent (rarely glabrous, var. *leiocarpa*, Lindbl.), 3 or 4 lines long; pedicels spreading or divaricate, 6 to 12 lines long. — From the Great Lakes across the continent to Oregon, and northward. Europe and Siberia.

10. D. STENOLOBA, Ledeb. Simple or branching below, villous toward the base: leaves mostly subrosulate, oblong-obovate or oblanceolate, the 1 or 2 cauline ovate to oblong-lanceolate, mostly entire, usually more or less villous and ciliate: pods linear, acute, glabrous, 4 to 7 lines long, equalling or exceeding the spreading pedicels. — Subalpine, from Colorado to the Sierra Nevada and northward; Unalaska.

11. D. MONTANA, Watson. Stellate-pubescent throughout and somewhat villous, leafy: racemes nearly sessile: pods linear-oblong, finely pubescent, obtuse or acutish, longer than the erect or ascending pedicels. — Proc. Am. Acad. 14. 289. Northern Colorado.

12. D. CRASSIFOLIA, Graham. Annual or biennial (?), very slender, glabrous throughout or the leaves ciliate: leaves in a basal tuft, narrowly oblanceolate: peduncles scape-like: pods lanceolate or oblong-lanceolate, acute, equalling or exceeding the spreading pedicels. — Colorado and northward, and in the Sierra Nevada; Greenland.

§ 4. DRABÆA, Lindl. Perennial caulescent or scapose above the branching leafy-tufted caudex (sometimes biennial and simple-stemmed in species of * * ← ←): leaves flat, soft, more or less broad, not carinate.

* Scapose.

← Flowers yellow: leaves entire (less than 6 lines long).

13. D. ALPINA, Linn. Caudex much branched, densely cespitose: leaves oblong-oblanceolate, with thick midvein at base, glabrous and villous-ciliate or somewhat villous-pubescent with simple or stellate hairs: scape pubescent: calyx villous: pods usually glabrous, ovate to oblong-ovate, acute; style short; stigma broad. — *D. pauciflora*, R. Br. *D. micropetala*, Hook. Greenland; Arctic coast and islands; Hudson's Bay; Rocky Mountains (Drummond; *D. rupestris*, β, Hook. Fl. Bor.-Am.). Northern Europe; Siberia.

14. D. HOWELLII, Watson. Cespitose, finely stellate-pubescent throughout: leaves broadly spatulate: flowers large, deep yellow: pods pubescent, somewhat obliquely oblong, acute at each end, on spreading pedicels; style slender. — Proc. Am. Acad. 20. 354. Siskiyou Mountains, California (*Howell*).

than the yellowish ovate sepals: pods broadly ovate-elliptical, acutish or obtuse, 2 lines long, ascending on pedicels about a line long; style

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15. D. LEMMONI, Watson. High alpine, densely cespitose: leaves thick, spatulate or oblong-obovate, ciliate and pilose with simple or forked hairs or nearly glabrous: scapes pilose: pods pubescent or glabrous, ovate to broadly lanceolate, somewhat twisted, on slender spreading pedicels; style short and stout. — Bot. Calif. 2. 430. *D. alpina*, var. *algida*, Bot. Calif. 1. 29, mainly. Peaks of the Sierra Nevada and of the Blue Mountains, Oregon.

16. D. VENTOSA, Gray. Cespitose, the slender branches of the caudex more or less densely leafy: leaves oblong-oblanceolate, densely stellate-pubescent or glabrate: pods ovate to oblong-lanceolate, densely pubescent to glabrous, on ascending pedicels; style short and slender. — Am. Nat. 8. 212. *D. alpina*, Watson, Bot. King, 20. Northern Utah and northwestern Wyoming; Stein's Mountain, southeastern Oregon.

17. D. EURYCARPA, Gray. Densely cespitose and stellate-pubescent: leaves oblanceolate, the scapes scarcely longer, few-flowered: pods large, oblong-obovate, acute, glabrous; style slender. — Proc. Am. Acad. 6. 520. Sierra Nevada (*Brewer*).

+ + Flowers white: leaves (mostly very small) entire or rarely few-toothed: scapes rarely with a single leaf.

18. D. NIVALIS, Liljeblad. Caudex with numerous slender matted branches: leaves oblanceolate, acutish, entire, with a stoutish midnerve, canescent with short dense stellate pubescence, ciliate near the base if at all: scapes and calyx pubescent: pods few on short pedicels, usually glabrous, oblong, acute at each end; style short, stout; stigma 2-lobed. — *D. muricella*, Wahl. *D. stellata*, var. *nivalis*, Regel. From Greenland and the Arctic coast to Labrador, Colorado, northern Utah and Nevada, and British Columbia. Iceland, Spitzbergen, and northern Europe. Flowers sometimes slightly tinged with yellow.

Var. ELONGATA. Leaves obtuse or acutish: scapes very slender: pods long (4 to 8 lines) and narrow, on rather longer pedicels. — *D. lævipes*, Hook. Rocky Mountains, from British America to Wyoming and the Uintas; Mt. Adams.

19. D. SUBSESSILIS, Watson. See page 255.

20. D. FLADNIZENSIS, Wulf. Leaves more loosely rosulate, narrowly oblanceolate, usually acute, entire, pilose-ciliate, usually sparsely villous or somewhat stellate-pubescent, rarely wholly glabrous: scapes usually glabrous; racemes short: petals often yellowish: pods glabrous, ovate-oblong or ovate, on short pedicels; stigma nearly sessile. — *D. androsacea* and *D. Lapponica*, Willd. *D. lactea*, Adams. *D. Wahlenbergii*, Hartm. Greenland to the lower St. Lawrence, and in the Rocky Mountains to Colorado. Europe and Asia.

Var. CORYMBOSA. Leaves occasionally toothed, ciliate and subpubescent: scapes and sepals usually pubescent: pods stellate-pubescent; style very short. — *D. corymbosa*, R. Br. Greenland and perhaps (the original specimens) the west coast of Baffin's Bay. Many of the specimens from Greenland and those from Spitzbergen that have been placed here appear to belong, some to *D. alpina* and others to *D. hirta*.

very short and thick. — On the White Mountains of Mono County, California, at 13,000 feet altitude (*W. H. Shockley*, July, 1886).

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* * Caulescent, the stems few- or many-leaved: leaves entire or few-toothed.

+– Flowers yellow.

++ Lower leaves often an inch long or more.

21. D. HYPERBOREA, Desv. Pubescence of very short branching hairs: caudex stout, simple: leaves coarsely toothed, oblanceolate, or the cauline oblong-obovate: corymb broad: pods obtuse, broadly elliptical to narrowly oblong, usually glabrous, on spreading pedicels; style short. — Alaska, from Sitka to the Aleutian and St. Paul's Islands.

22. D. CHRYSANTHA, Watson. Caudex much branched; stems glabrous or loosely pubescent: leaves deep green, very narrowly oblanceolate to linear, rarely few-toothed, usually glabrous or sparingly ciliate: pods glabrous, oblong to oblong-lanceolate, on usually short pedicels; style short, slender. — Proc. Am. Acad. 17. 364. High peaks of Colorado and Arizona.

23. D. STREPTOCARPA, Gray. Thinly villous with long simple or branched hairs; caudex simple or sparingly branched: leaves oblanceolate to (the cauline) oblong or lanceolate, rarely toothed, ciliate and villous: pods lanceolate, usually twisted, glabrous or pubescent on the margin, exceeding the ascending pedicels; style slender. — Am. Journ. Sci. 2 ser. 33. 242. Mountains of Colorado and New Mexico; an Arizona form approaches the next.

24. D. AUREA, Vahl. Pubescent throughout with short stellate hairs, occasionally subpilose: leaves usually narrow, frequently ciliate at base: pods lanceolate to linear, acute, rarely glabrous; style short and stout, — otherwise like the last. — Greenland; Rocky Mountains, from British America to New Mexico and Arizona; Mignon Island, Gulf of St. Lawrence. A form with ovate pods occurs in Utah and Colorado.

Var. STYLOSA, Gray. Style very slender, a line long. — New Mexico (*Fendler*). A doubtful form from New Mexico and Arizona has broad ovate and entire cauline leaves.

++ ++ Leaves small, half an inch long or less.

25. D. AUREOLA, Watson. Rather densely stellate-pubescent throughout; caudex simple or branched; stem stout, simple: leaves numerous, oblanceolate, obtuse, entire, the cauline oblong: raceme short and dense; calyx glabrous: pods broadly oblong, obtuse, pubescent, flat, on short spreading pedicels; style short and stout. — Bot. Calif. 2. 430. Lassen's Peak, California.

26. D. CORRUGATA, Watson, l. c. Pubescent throughout with loose branching hairs; stems branching from the base, very leafy: leaves entire, oblong-oblanceolate: calyx pubescent: pods lanceolate to broadly oblong, acute or obtuse, much corrugated and twisted; style long, attenuate to a minute stigma. — San Bernardino Mountains, California.

+– +– Flowers white.

++ Stems simple or sparingly branched.

= Cauline leaves usually several to many.

27. D. INCANA, Linn. Stellate-pubescent throughout, usually loosely; caudex often simple: leaves few-toothed or entire, oblanceolate or the cauline lanceo-

Draba Breweri. Dwarf and alpine, biennial or a short-lived perennial, the very shortly branched caudex sending up 2 to 6 or more simple leafy stems 1 to 3 inches high, canescent throughout with a fine dense stellate pubescence: basal leaves crowded, oblong

late to ovate: pods oblong to lanceolate, usually acute and flat, glabrous or finely pubescent, usually suberect on ascending pedicels; style very short. — *D. contorta* and *D. confusa*, Ehrh. Greenland to Labrador, New Brunswick and northern Vermont, and in the Rocky Mountains to Colorado and British Columbia. Europe and Asia. Most western specimens are more finely and densely pubescent than is usual.

Var. arabisans. Caudex much branched: pod glabrous, acuminate or acute, often twisted; style longer. — *D. arabisans*, Michx. *D. Canadensis*, Brunet, a form with ovate pods. Labrador to northern Vermont and the shores of the Great Lakes. Grading indefinitely into the typical form.

28. D. Breweri, Watson. See above.

29. D. borealis, DC. Loosely stellate-pubescent throughout, more or less cespitose: leaves ovate to oblong-ovate: pods broad, ovate to oblong ovate, flat, exceeding the pedicels; style short and stout. — *D. Unalaschkiana*, DC. *D. incana*, var. *borealis*, Torr. & Gray. Alaska and adjacent islands to British Columbia and the northern Arctic coast. Kamtchatka. A variety with longer pedicels (*D. Sachalinensis*, Schmidt) is found in Japan.

= = Cauline leaves usually one to three.

30. D. hirta, Linn. Loosely and often sparingly stellate-pubescent: caudex branched: leaves narrowly oblanceolate, or the cauline ovate, frequently more or less ciliate: pods oblong-lanceolate to -ovate, often twisted, glabrous or sparingly pubescent; style short and stout. — *D. oblongata* and *D. rupestris*, R. Br. *D. gracilis*, Ledeb. Greenland to Alaska. Northern Europe and Asia.

Var. arctica. Densely tufted and more densely pubescent: leaves short, the cauline ovate: pods pubescent. — *D. arctica*, Vahl. Greenland and Grinnell Land (*Greeley*). Spitzbergen.

↔ ↔ Stems diffusely branched above.

31. D. ramosissima, Desv. Thinly stellate-pubescent, the caudex much branched: leaves oblanceolate, laciniately toothed: pods oval to narrowly oblong, pubescent, twisted; style long and slender. — Mountains of Virginia and Tennessee; cliffs of Kentucky River.

§ 5. Aizopsis, DC. Scapose cespitose perennials: leaves linear, entire, becoming more or less rigid, carinate: flowers yellow.

32. D. glacialis, Adams. Alpine or subalpine: leaves linear or linear-oblanceolate, more or less loosely (or densely) stellate-pubescent, sometimes ciliate at base: pods ovate to ovate-oblong, acute (rarely narrowly oblong and acute at both ends), usually finely pubescent; style short. — *D. oligosperma*, Hook. *D. alpina*, var. *glacialis*, Dickie. From the arctic regions to Colorado, Utah, and California. Siberia and Spitzbergen. Quite variable.

Var. rectinata. Alpine and very densely cespitose, the short rigid leaves glabrous or nearly so and ciliate with long rigid hairs. — *D. densifolia*, Nutt. From northern Utah to the Sierra Nevada.

to linear-oblong, obtuse, entire or rarely sparingly toothed, 2 to 4 lines long, sometimes slightly ciliate at base, the cauline few (2 to 4), oblong-ovate: flowers small, white, the sepals oblong, herbaceous: pods linear-oblong, 2 or 3 lines long, obtusish, pubescent, ascending on short pedicels; stigma sessile or nearly so. — On Mt. Dana, at 12,000 feet altitude (*W. H. Brewer*, 1863); White Mountains, Mono County, at 13,000 feet (*W. H. Shockley*, July, 1886).

Cheiranthus occidentalis. Annual, low (6 inches high or less), erect, simple or branching from the base: leaves linear- or narrowly oblanceolate: flowers lemon or orange-color, 6 lines long: pods 2 to 3½ inches long by 1½ lines broad, beaked by a style 2 lines long, ascending on pedicels about 3 lines long: seeds narrowly winged. — *Erysimum asperum*, var. (?) *pumilum*, Watson, Bot. King's Expl. 24. In Washington Territory (Wallawalla, *Lyall;* Klickitat County, *Suksdorf*), Oregon (Wasco County, *Suksdorf*), and northern Nevada (near Carson City, *Watson*). Resembling dwarf states of *Erysimum pumilum*, to which it has been referred in the want of fruiting specimens, which are first collected by Mr. W. C. Suksdorf.

Caulanthus Lemmoni. A stout branching annual, 1 or 2 feet high, glaucous and glabrous or sparingly hispid with spreading simple or branched hairs: cauline leaves broadly auriculate-clasping, lanceolate, acuminate, entire, or the lower somewhat oblanceolate and toothed: racemes open, elongated, the streptanthoid flowers (sepals more or less brownish purple) spreading or reflexed on usually hispid pedicels: petals undulate, 6 or 8 lines long, the blade not broader than the claw, white veined with brown: pods subterete with nerved valves, 2½ to 5 inches long by 1½ lines broad, ascending; style very variable in length; stigmas divaricate. — Near Cholame, northeastern part of San Luis Obispo County, Calif. (*J. G.* and *S. A. Lemmon*, June, 1887).

Silene Luisana. Perenuial, glaudular-pubescent throughout, a foot high: leaves very narrowly linear, 2 inches long or less: peduncles 1–2-flowered, equalling the floral leaves: calyx narrowly cylindrical, 6 or 7 lines long, the teeth oblong-ovate, membranously margined and ciliate; petals white (?), 9 lines long, the oblong blade bifid to the middle, with or without small lateral teeth, the claw narrowly auriculate, and the narrowly oblong appendages acute and more or less lacerately toothed; filaments naked: capsule subcylindric, upon a stipe 1½ lines long, the small flattened seeds tuberculate, scarcely crested. — Nearest to *S. verecunda*. On rocks near San Luis Obispo (*J. G.* and *S. A. Lemmon*, n. 4557, June, 1887); also near Tolon, in Monterey County (*T. S. Brandegee*, 1886).

Calandrinia Howellii. Closely resembling *C. Cotyledon:* leaves more narrowly spatulate, 3 inches long or less, entire at the summit, the narrowly scarious margin crisped-undulate: scapes and inflorescence as in *C. Cotyledon*, but the flowers sessile or nearly so; petals 6 to 8; stamens 5 to 7, the narrow filaments slightly coherent below: ovary 2–4-valved; seeds 4 to 10. — On the Deer Creek Mountains in Josephine County, Oregon (*Thomas Howell*, July, 1887); also in cultivation at Cambridge. The leaves of *C. Cotyledon* are not at all crisped upon the margin, and have usually a few small teeth at the summit. The seeds of both species are ecarunculate, black and shining.

Sidalcea Hendersoni. Tall and apparently perennial (3 or 4 feet high), glabrous throughout, the stem simple or nearly so: leaves palmately 7-cleft to below the middle, the mostly broad segments coarsely lobed and toothed, the upper leaves 3–5-parted and the segments narrower: flowers large (9 to 12 lines long), in a loose raceme, the pedicels (1 to 3 lines long), shorter than the linear bracts: calyx large (½ inch long in fruit), the lobes ovate-lanceolate, shortly acuminate: carpels few (8), smooth and glabrous, 2 lines long including the conspicuous linear beak. — Near the shore of Clatsop Bay, Oregon (*L. F. Henderson*, July, 1887).

Trifolium Howellii. Perennial (?), glabrous throughout, the stout stems 2 feet long: stipules large, lanceolate to ovate; petioles short; leaflets mostly cuneate-oblanceolate, 1½ to 3 lines long, irregularly toothed: peduncles axillary, exceeding the leaves: heads naked, ovate or oblong, the short-pedicellate flowers soon reflexed: calyx-teeth narrow, about equalling the tube; corolla 4 or 5 lines long: pod 2-ovuled, 1-seeded, a little exceeding the calyx. — Of the *T. ciliatum* group. In the Siskiyou Mountains, southern Oregon (*Thomas Howell*, July, 1887).

Astragalus sylvaticus. Near *A. tricarinatus* and *A. albens:* glabrous, the decumbent or ascending stems a foot long or more: leaflets 8 to 10 pairs, oblong, retuse, 4 to 9 lines long: peduncles equalling or exceeding the leaves; racemes small, close (about an inch long): calyx very slightly pubescent, the acuminate teeth about equalling the campanulate tube; petals ochroleucous, 3 or 4 lines long: pod chartaceous, sessile, linear and more or less curved, compressed, 2-celled by the intrusion of the dorsal suture, the ventral acute, 6 to 8 lines long by 1½ broad. — Near Glendale in southern Oregon, "in open gravelly ground" (*L. F. Henderson*) or "in dense forests" (*Thomas Howell*, June, 1887, — who suggests the name).

Astragalus oxyphysus, Gray. This species is described as having inflated pods. Fruiting specimens have recently been collected by Mr. Lemmon in the northern part of San Luis Obispo County, in which the pods are much compressed and distended only partially in the middle, both sutures being acute and the ventral one straight. The stipe is villous and as much exserted from the narrow calyx-tube as in *A. leucopsis*, which the species much resembles in appearance.

Lathyrus cinctus. Sparingly pubescent throughout: stem stout, angled: stipules foliaceous, semihastate, lanceolate, nearly an inch long, the broad basal lobe coarsely toothed; leaflets 10 to 15 pairs, narrowly oblong, obtuse, mucronate, 1 to 1½ inches long: peduncles much shorter than the leaves, few-flowered: calyx short, the longer teeth equalling the tube; petals 6 lines long or more: pod nearly straight, broad, 1½ inches long by 5 or 6 inches wide, 3–5-seeded: seeds orbicular, nearly surrounded by the hilum, 2½ lines broad. — Near Tolon, Monterey County, California (*T. S. Brandegee*, 1886). A very distinctly marked species; turning black in drying.

Lathyrus palustris, Linn., var. (?) graminifolius. Leaves very narrow and elongated, 2 to 4 inches long and often only a line wide or less; flowers variable in size and color, often yellow. — Frequent from New Mexico to Arizona and northern Mexico.

Ivesia Shockleyi. Alpine, dwarf and cespitose, the stout much-branched caudex compacted with the persistent remains of dead leaves, finely pubescent throughout and more or less glandular: leaves 1 to 1½ inches long or less, the petiole usually ciliate and somewhat villous at base; leaflets 3-parted, approximate or imbricated, rarely a line long, often setosely tipped: inflorescence open, few-flowered: calyx small, campanulate, becoming rotate, the deltoid lobes exceeding the white spatulate petals: stamens 5 or sometimes 10: pistils few (6 or less) upon a villous receptacle. — Summit of Silver Peak, Alpine County, California (*J. G. Lemmon*, 1873); in the White Mountains, Mono County, at 13,000 feet altitude (*W. H. Shockley*, 1886).

Pyrus (Sorbus) occidentalis. A shrub, 2 feet (*Suksdorf*) to 4 or 6 feet high (*Brewer*), glabrous or very nearly so: leaflets 3 or 4 (very rarely 5) pairs, oblong-elliptical, obtuse, sometimes mucronate, dentate usually only toward the apex (rarely below the middle) or sometimes entire, 1 to 2 inches long, the rhachis 3 or 4 inches long: cyme small and usually rather few-flowered: calyx glabrous: fruit pyriform, red, 4 lines long: seeds semicircular in outline, 1½ lines long. — In the mountains from Washington Territory to California (Cascade Mountains, *Lyall*; Mt. Adams, at 5–6,000 feet altitude, *Suksdorf*;

"Oregon," 148 *Hall*; at Summit in the Sierra Nevada, *Bolander*; on the Big Tree road at 6,000 feet altitude, 1960 *Brewer*, and in Ebbett's Pass at 6,500 to 8,500 feet, 2091 *Brewer*). The Californian specimens have the leaves more toothed and the cymes larger than the more northern ones. It is said by Mr. Suksdorf to grow at a higher altitude than *P. sambucifolia*, the fruit differing in shape and darker colored. The seeds are shorter and proportionally broader than those of *P. sambucifolia*. It appears to be the only form that has been collected in California.

SAXIFRAGA OCCIDENTALIS. Resembling *S. Virginiensis*; leaves often more or less densely rufous-tomentose beneath: inflorescence open, glabrous or somewhat glandular-pubescent: calyx free from the pistils, cleft nearly or quite to the base, the segments very obtuse, not reflexed; petals white, oblong-obovate, obtuse; filaments slender: seeds with a loose smooth testa. — From the Rocky Mountains of British America (*Drummond*) to British Columbia and Vancouver Island (*Lyall, Macoun*), Oregon (*Cusick, Henderson, Howell*), and the northern Sierra Nevada (Chico, *Mrs. J. Bidwell, Gray*). In *S. Virginiensis* the base of the calyx is somewhat broader and the segments acutish, the filaments are somewhat dilated at base, and the seeds are muricate-costate. Though it varies in pubescence the leaves appear to be never densely tomentose beneath, and it is probably not found far west of the Mississippi. *S. eriophora* of Arizona has seeds similar to those of *S. occidentalis* and is a close ally, but it differs in the campanulate short-lobed calyx which is adnate to the ovary. The seeds of *S. reflexa* are somewhat tuberculate-costate. The specific name is given to the species as the western correlative of the common eastern *S. Virginiensis*.

HARTWRIGHTIA, Gray. A new genus of *Eupatoriaceæ*, of the subtribe *Piqueriæ*. Heads few-flowered. Involucre turbinate-campanulate, of few narrow and nearly equal herbaceous bracts, somewhat in two rows, the inner more chaffy. Receptacle convex, with a few bracts near the margin resembling the inner involucral ones. Corolla regular, the very short tube and broadly funnelform throat little longer than the obtuse lobes of the limb. Anthers exappendiculate, obtuse, truncate at base. Style-branches long-exserted, linear, slightly thickened above. Achenes obpyramidal, acutely 5-angled, contracted at the summit, where the margin is callously lobed by a thickening of the angles. Pappus none. — A perennial erect herb, with alternate petiolate entire leaves, and loose paniculate corymbs of small heads. Flowers purplish.

H. Floridana, Gray. Glabrous, but resinous-atomiferous throughout even to the corolla and achenes, 2 to 4 feet high, slender, branching above: leaves distant, narrowly oblong-oblanceolate or the upper linear, attenuate to a long petiole, obtuse or acutish, on the branches much reduced and linear or spatulate: heads few, 7–10-flowered, 2 lines long; involucral bracts 8 or 10, obtuse: achenes smooth, equalling the involucre. — In sphagnous swamps, Volusia County, Florida; discovered by Dr. S. Hart Wright, of Penn Yan, New York, in November, 1886, by whom it was sent to Dr. Gray. It was recognized as a new genus, but description and publication were delayed until more material could be examined. This was received only during Dr. Gray's last illness, and at Dr. Wright's request the genus is now published. Dr. Gray left no notes upon its characters, but it is evidently closely allied to *Gymnocoronis* and *Adenostemma*, from which it is distinguished by habit, the alternate entire leaves, the narrower styles, the smooth thin-angled achenes, and the few bracts upon the receptacle embracing the outer ones. It is the only member of the *Piqueriæ* that has been detected within our limits.

Chaptalia Seemannii, Benth. & Hook. Closely resembling *C. nutans* in appearance, from which it is distinguished by a number of short appressed distant bracts upon the scape, the "heads never nodding," and the short stout beaks of the achenes. This species has been found during the past season by Mr. Pringle in Chihuahua, and proves to be the same as specimens collected in New Mexico (*Greene*) and Arizona (2789 *Lemmon*), which are referred in the Synoptical Flora to *C. nutans*.

Pentstemon Shockleyi. Somewhat woody at base and branching, the branches erect, 1½ feet high, finely puberulent throughout: leaves nearly uniform in size, oblong-ovate, obtuse or acute, sessile or nearly so, undulate, entire, 3 to 5 lines long, the floral gradually smaller: flowers mostly solitary and nearly sessile in the axils; calyx 3 lines long, the lobes lanceolate, acuminate; corolla purplish, 5 lines long, only slightly dilated above and the oblong obtuse lobes nearly equal; sterile filament beardless: capsule equalling or a little exceeding the calyx. — On Miller Mountain, Esmeralda County, Nevada, at 8,000 feet altitude (*W. H. Shockley*, 1886). Of the *P. deustus* group; strongly marked by its small undulate leaves, its strict subspicate inflorescence, and very small narrow flowers.

Eriogonum pendulum. Near *E. lachnogynum*, a tall perennial, woody and branching at base, densely white-tomentose throughout, the scattered oblong-oblanceolate obtuse leaves (1 to 2½ inches long) and

foliaceous bracts subglabrate above: the broad inflorescence several times di- or trichotomous upon naked peduncles; pedicels mostly elongated and naked; involucres at first nodding, campanulate (1½ to 2 lines long), the deltoid teeth erect: flowers very small, densely tomentose, slightly exserted. — Near Waldo, southern Oregon (*T. Howell*, July, 1887).

Eriogonum (§ Virgata) citharæforme. Annual, prostrate or procumbent, branching from the base, mostly glabrous excepting the floccose-woolly lower surface of the leaves; stems a foot high or less, several times 2–3-plurichotomous, the lower bracts foliaceous, the upper small and triangular: lower leaves 4 inches long or less, undulate, dilated and 3–5-nerved at the summit, the rounded blade abruptly contracted into the long winged petiole: involucres glabrous, broadly turbinate, with broad teeth, 1 to 1½ lines long; flowers rose-color, a line long, the segments spatulate-obovate. — Nearest to *E. gracile*. Found by *J. G. Lemmon* (n. 1584) on Baron Schroeder's ranch, 30 miles north of San Luis Obispo, in June, 1887.

Tillandsia (Diaphoranthema) Wilsoni. Stem simple, very short (about ½ inch): leaves numerous, 1 to 3 or 4 inches long, gradually narrowed from the clasping base to the long-attenuate apex, channelled above, more or less hoary with minute appressed peltate brown-centred scales: peduncle very slender, recurved, about equalling the leaves, with 2 distinct bracts, probably 1–3-flowered: flowers and capsules not seen. — Abundant upon dead branches of the red cedar in a hummock skirting the Pithlachascotee River in Hernando County, Florida, about two miles above its mouth, where it was discovered, in 1887, by Dr. W. P. Wilson, of the University of Pennsylvania. It is in cultivation at Cambridge, but has not yet flowered; very distinct from all our other species.

Brodiæa Hendersoni. Closely related to *B. Bridgesii*: scape and leaves about a foot high, the leaves 3 to 5 lines broad: pedicels about an inch long: corolla salmon-color with often broad brown-purple nerves, 6 to 12 lines long, the narrowly turbinate tube shorter than or barely equalling the limb: stamens in one row at the throat, the slender equal filaments scarcely or but slightly broader near the insertion, somewhat wing-dilated below within the tube; anthers very short: capsule ovate, shorter than the stipe. — Near Ashland, Jackson County, Oregon (*L. F. Henderson*, July, 1884 and 1886).

Calochortus (Mariposa) Howellii. Of the *C. nitidus* group: stem erect, a foot high or more, 1–2-flowered: leaves very narrow, the cauline (one and a floral pair) short; sepals ovate, shortly acumi-

nate; petals yellowish-white, an inch long, denticulate, slightly ciliate near the base, covered within with short crisped hairs, those above the gland denser and brown-purple; gland transversely oblong, densely covered with short yellow hairs: anthers oblong-lanceolate, acute and apiculate, 3 lines long: capsule elliptical, acute, 9 lines long. — Found near Waldo, Oregon, in 1884, and at Roseburg in 1887, by Thomas Howell.

Juncus Oreganus. Near *J. supiniformis:* stems numerous from very slender matted rootstocks, low (a span high or much less), very slender, exceeding the very narrow leaves, simply paniculate: heads few-flowered, often proliferous: sepals nearly equal, lanceolate, acute, twice longer than the six stamens; filaments about equalling the anthers: capsule dark brown, acutish, mucronate, at length nearly twice longer than the sepals (2½ lines long); seeds rather turgid, about 20-costate, with transverse lines between the costæ. — In bogs at Ilwasco, southern Oregon (*L. F. Henderson*, 1886). Differing from *J. supiniformis* in its comparatively shorter leaves, proliferous habit, hexandrous flowers, often larger capsules, and more turgid and more strongly marked seeds, which in *J. supiniformis* are narrowly oblong, and faintly 12–15-striate without cross-markings.

2. *Some New Species of Mexican plants, chiefly of Mr. C. G. Pringle's collection in the mountains of Chihuahua, in* 1887.

Thalictrum grandifolium. Tall and glabrous or "sometimes pubescent:" leaves ample, 3–4-ternate, petiolate, with dilated stipules; leaflets very large (1 to 2½ inches long), somewhat obliquely rounded, often cordate (or the uppermost cuneate) at base, obtusely lobed, the prominent veins beneath with scattered short stout curved hairs: inflorescence diœcious, open and spreading, somewhat leafy-bracteate; pedicels elongated, nodding at the summit: carpels 2½ lines long, semicircular, beaked by the short stout base of the very long (3 or 4 lines) filiform style, compressed, faintly and irregularly nerved: seed filling the cavity, flattened-subovate. — Collected by Mr. Pringle (n. 1513) under cliffs of the Sierra Madre, Chihuahua, Oct., 1887.

Thalictrum pinnatum. Glabrous and glaucous, slender, scarcely 2 feet high, from a fascicled tubero-fibrous root: leaves lanceolate in outline, 2½ inches long or less, very shortly petiolate and estipulate, pinnate with about 7 (or fewer) pairs of divisions, the lower divisions ternate with small lobed leaflets, the upper reduced to a single 3-lobed

leaflet: flowers dioecious; sepals of the fertile flowers very small: stigmas short and rather thick; achenes ovate, about a line long, undulately ribbed, the ovate seed filling the cavity. — On pine plains at the eastern base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1181), Sept., 1887.

Thalictrum Wrightii. Gray. Mr. Pringle also collected in the Sierra Madre specimens of this species, which accord in every way with Wright's original specimens from Sonora. It appears to be clearly distinguishable from all forms of *T. Fendleri* by the very prominent reticulate venation of the leaflets.

Delphinium viride. Glaucous; root rather thick, branching; stem about 2 feet high, glabrous: leaves pubescent, pedately cleft, with segments acutely lobed, the upper distant, more deeply divided and segments narrower: raceme few-flowered, the pedicels (1 or 2 inches long) glabrous or more or less reflexed-pubescent: calyx pubescent, yellowish green, the lanceolate sepals 6 lines, and the stout nearly straight spur about 10 lines long; petals purple, 3 lines long, the lateral with an oblong-lanceolate entire or cleft villous blade: capsules very finely pubescent: seeds large, marginately angled, with a close dark and somewhat rugose testa. — On gravelly bluffs of streams at the east base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1185), Sept., 1887. Peculiar in its green calyx and short purple petals.

Helianthemum Pringlei. Puberulent throughout; stems herbaceous, erect, a foot high, branching above: leaves oblanceolate, scabrous on the margin, an inch long by a line or two wide, the upper much reduced: inflorescence open, the slender pedicels jointed usually near the middle; flowers perfect; sepals 2 lines long or more, the outer shorter and linear, the inner ovate, acute, purplish; petals broadly flabelliform, entire, 4 lines long: stamens 20 to 25: capsule triangular-globose, a little shorter than the calyx. — On pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1186), Sept., 1887.

Helianthemum Chihuahuense. Villous throughout; stems also finely pubescent, numerous, herbaceous or somewhat woody at base, 6 inches high: leaves oblong-oblanceolate, about 9 lines long by 2 broad, with much smaller ones fascicled in the axils: flowers in short few-flowered axillary and terminal corymbs, on short pedicels, jointed near the middle and bracteolate or at the base and naked, perfect, dimorphous, the lower apetalous and octandrous, the upper with emarginate petals (4 lines long) and 25 to 30 stamens; sepals

2 lines long, the outer linear, the inner ovate, acute: capsule nearly equalling the calyx. — In the same region; C. G. Pringle (n. 1187), Oct., 1887.

Silene Pringlei. Finely roughish-tomentose and subglandular, slender, erect, 1 to 3 feet high: leaves linear-lanceolate, acuminate, narrowed to the base, 3 to 7 inches long: inflorescence more or less elongated, the peduncles at each node 1–3-flowered, erect, slender: calyx narrow, 10-nerved, 7 or 8 lines long, the ovate teeth fimbriate-ciliate; petals an inch long, dull brownish-purple (?), auricles prominent, appendages large and saccate, entire, the blade bifid to below the middle with a tooth on each side: stamens and styles scarcely exserted: capsule oblong-ovate, stipitate: seeds finely tuberculate. — On cool slopes at the base of cliffs in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1190), Oct., 1887.

Cerastium Madrense. Perennial (?), a foot high or more, viscid-pubescent throughout: leaves mostly radical, oblong- to narrowly oblanceolate, 2 inches long, glabrous above, sparsely villous beneath and villous-ciliate, the cauline few and distant, linear-lanceolate to linear: inflorescence cymosely paniculate, the flowers on slender pedicels an inch long, nodding in fruit; bracts small: fruiting calyx $2\frac{1}{2}$ to $3\frac{1}{2}$ lines long, the exserted capsule slightly curved. — On the cool summits of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1504), Oct., 1887.

Malvastrum jacens, Watson. An erect form of this with more deeply lobed leaves was collected by Mr. Pringle (n. 1199) on sandy stream-banks in the Sierra Madre. This species is referred by Dr. Gray (Proc. Amer. Acad. 22. 288) to *M. Peruvianum*, from which it differs especially in its fascicled clusters of flowers in the axils or on short peduncles, not "at length evolute into unilateral spikes," and in the fewer (6, rarely 8) and more turgid carpels.

Hibiscus spiralis, Cav.? Collected by Mr. Pringle (n. 1452) in the valley of Mexico; differing from *H. tubiflorus*, DC., chiefly in the more shrubby habit, the small leaves more cuneate at base, and the shorter blunt lobes of the calyx.

Linum Pringlei. Biennial (or sometimes perennial?), erect and rather strictly branched from the base, the stems with slender ascending branches above, glabrous and glaucous: leaves numerous, erect and more or less imbricated, without glandular stipules, oblong-oblanceolate, acute, 6 lines long or less: inflorescence loose; pedicels slender: sepals lanceolate, carinate, slightly scabrous on the margin, $1\frac{1}{2}$ lines long; petals white, twice longer: capsule broadly ovate,

blunt, the erect styles somewhat coherent below; dissepiments ciliate. — On shaded slopes in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1200), Sept., 1887. Somewhat resembling *L. Greggii*, under which name it has been distributed.

Ceanothus azureus, Desf., var. (?) parvifolius. A widely branching shrub, with slender branchlets and small narrow leaves, 3 to 9 lines long; fascicles of flowers in a very short, mostly naked, raceme-like thyrse (an inch long or less), the pedicels scarcely a line long. — On rocky slopes of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1205), Oct., 1887.

Lupinus montanus, H.B.K., var. glabrior. A nearly glabrous form, with some fine pubescence. — On high wooded slopes of the Sierra Madre, Chihuahua, at 9,700 feet altitude; C. G. Pringle (n. 1206), Oct., 1887. There can be little doubt that this species includes both *L. vaginatus*, Cham. & Schlecht., and *L. flagillaris*, Bertol.

Hosackia Chihuahuana. Annual, erect, very finely appressed-pubescent, a foot high; stipules foliaceous, small (about a line long), oblong-oblanceolate; leaves shortly petiolate, 5–7-foliolate, the leaflets oblanceolate, acute to retuse, 6 lines long or less: peduncles about equalling the leaves, 1–3-flowered, the bract at the summit small, trifoliolate; calyx 2 lines long, the teeth as long as the tube; petals yellow, turning brownish purple: pod nearly straight, about an inch long. — On shaded rocky slopes in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1210), Sept., 1887. Differing from *H. gracilis* in pubescence, small stipules, shorter petioles, and shorter calyx.

Astragalus Yaquianus. Of the *Mollissimi*; tomentose (the leaflets appressed-villous), perennial, the ascending stems a foot high: leaflets 10 to 15 pairs, narrowly oblong, acute or subacuminate, 6 to 12 lines long: peduncles stout, about equalling the leaves: flowers yellow, becoming reflexed, 8 to 10 lines long; calyx white-tomentose, half as long, the linear teeth shorter than the cylindrical tube; petals erect: ovary and pod glabrous, 2-celled, the latter erect, sessile, coriaceous, compressed-ovate deeply sulcate on the back, ½ inch long. — On moist banks and gravelly bars of the upper Yaqui River at Guerrero, Chihuahua; C. G. Pringle (n. 1218), Sept., 1887.

Astragalus scalaris. § *Scytocarpi*; biennial, very sparingly and finely pubescent, the suberect very slender stems 2 feet high: leaflets 10 to 12 pairs, linear, 2 to 6 lines long, retuse or obtuse: peduncles equalling or exceeding the leaves, bearing a slender raceme of small distant spreading flowers: calyx campanulate, a line long, with short

acute teeth; petals purple, 2½ lines long, the banner spreading: pods reflexed, glabrous, sessile, 1-celled, thin-coriaceous, oblong or oblong-ovate, turgid, obtuse, nearly 3 lines long. — By streams in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1220), Sept., 1887. Somewhat resembling *A. flexuosus*, but with much shorter pods.

Brongniartia minutifolia, Watson, var. canescens. Similar to Dr. Havard's original specimens from western Texas, but canescent with short appressed hairs and the stipules linear instead of oblong; a round bush, about 2 feet high. — Plains, at Orfiz, Chihuahua; C. G. Pringle (n. 1449), 1887.

Brongniartia sericea, Schlecht. Valley of Mexico; C. G. Pringle (n. 1454), 1887. Agreeing with Schlechtendal's description except in the fewer (2 or 3) peduncles and narrower bractlets.

Desmodium (Heteroloma) Pringlei. Erect, herbaceous, tall (4 or 5 feet), branching, the terete stem and branches and the long petioles rough with rather dense short stiff hooked hairs: stipules lanceolate, acuminate; leaflets thin, broadly ovate to ovate-elliptical, rounded or subcuneate at base, obtuse, 1½ to 3 inches long and nearly as broad, thinly strigillose-villous on both sides: fruiting racemes elongated; bracts ovate, acuminate; pedicels in pairs, widely spreading, 6 to 9 lines long: pods 4–7-jointed, the dorsal margin less deeply notched than the ventral, the joints 2 to 3 lines long, densely uncinate-pubescent. — In the shade on dry rocky ledges, Arroyo Aucho, in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1226), Oct., 1887. Near *D. strobilaceum*.

Desmodium (Heteroloma) Mexicanum. Perennial, herbaceous, trailing, the angled stems and branches (3 or 4 feet long) hispid with straight spreading and with shorter stiff hooked hairs: stipules lanceolate, acuminate, villous; petioles very short; leaflets orbicular to round-ovate, truncate or subcordate at base, thinly villous both sides and ciliate (substrigillose above), the larger 2 inches broad: racemes axillary and terminal, hooked-pubescent; pedicels distant, in pairs, spreading, about 6 lines long, the small bracts and broad calyx somewhat villous: pods 3–7-jointed, the sutures nearly equally indented; joints suborbicular, finely uncinate-pubescent, 2 lines long. — On pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1227), Sept., 1887. Allied to *D. molliculum*.

Cologania Pringlei. Perennial, with short procumbent slender stems, the pubescence reflexed and hispid: leaves nearly sessile; leaflets small (the larger 6 to 10 lines long), obovate, rounded or subretuse at the summit, glabrous above, sparingly appressed-hairy

beneath: flowers mostly sessile or nearly so and undeveloped, sometimes pedunculate and larger, the calyx sparingly short-hairy: pods usually glabrous or slightly hairy on the sutures, sometimes thinly covered with short appressed hairs, 8 to 10 lines long, attenuate at base, 3–8-seeded. — On pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1499), Oct., 1887. Resembling *C. Martia*, *C. humifusa*, and *C. Lemmoni* in habit and in its dimorphous sessile or pedunculate flowers.

Leucæna Greggii. A small tree, 10 to 15 feet high, the young parts finely pubescent with short spreading yellowish hairs, becoming glabrate: stipules triangular-ovate, acuminate; pinnæ 5 to 7 pairs, with a conspicuous subcylindrical gland at the base of each; leaflets numerous (15 to 30 pairs), narrowly oblong, acute or subacuminate, 3 to 6 lines long, the lateral nerves none or very faint: peduncles axillary, solitary or in pairs, 1 to 3 inches long: pods linear, 8 inches long by 4 to 6 lines broad, attenuate below to a short stout stipe and beaked with a slender style 1 or 2 inches long: seeds longitudinal. — Near Rinconada (Dr. Gregg, 1847), at Saltillo (307 Palmer, 1880, distributed as *L. glauca*), and mountains near Monterey (C. S. Sargent, 1887). Distinguished from *L. glauca* by the glands of the rhachis, the more faintly nerved leaflets, the narrower thicker and long-attenuate pod, and the longitudinal seeds.

Pithecolobium Palmeri, Hemsl., var. recurvum. Flowering specimens which closely resemble this species, but have the rather short spines strongly recurved, were found in the Mapula Mountains, Chihuahua, by C. G. Pringle, April, 1887.

Potentilla Pringlei. Stems decumbent, a foot long or more including the paniculate few-flowered inflorescence, finely tomentose: leaves mostly radical, ternately digitate: leaflets broadly linear (1 or 2 inches long by about 2 lines broad), acutely toothed, nearly glabrous above, densely white-tomentose beneath: flowers on very slender pedicels, rather large, yellow; calyx-lobes lanceolate, the accessory lobes linear: stamens 20: styles filiform, nearly terminal. — On pine plains near the Sierra Madre, Chihuahua; C. G. Pringle (n. 1494), Sept., 1887. Near *P. gracilis*.

Tillæa viridis. Stems numerous, much branched, spreading, about 2 inches long: leaves narrowly linear, acute: flowers solitary in the axils, very shortly pedicellate, minute; sepals broad and rounded; petals twice longer, equalling the carpels, obtuse: follicles green, obtuse, 8-seeded, less than half a line long. — Wet places, base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1561), Oct., 1887.

Sedum Pringlei. Annual, glabrous; stems 2 or 3 inches high, from a slender subtuberous root, leafy, several times dichotomously forked above: leaves sessile, oblong-lanceolate, obtuse, 3 lines long: flowers few upon the branches, very shortly pedicellate: sepals about a line long, the lanceolate acutish pale-rose petals twice longer: filaments subulate, shorter than the petals; scales oblong-spatulate, firm and thick: carpels erect, acutish, the styles very short. — In thin soil on hillsides near Cusihuiriachic, Chihuahua; C. G. Pringle (n. 1239), Aug., 1887.

Sedum Chihuahuense. Annual, glabrous; stems erect from a small oblong tuber, 3 to 5 inches high, repeatedly dichotomous above: leaves sessile, oblong or oblong-lanceolate, obtuse, 3 or 4 lines long: flowers sessile or very shortly pedicellate upon the slender branches; sepals broadly oblong, obtuse, 1 becoming 1½ lines long; petals white, oblanceolate, 2 lines long: stamens included; scales clavate, slender: carpels shorter than the petals, attenuate above, at length divergent. — Nearly allied to the last and to *S. fuscum*, Hemsl. In thin soil on rocky ledges in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1240), Sept., 1887.

Sedum Madrense. Perennial, with a somewhat creeping rootstock, the branching stems 6 inches high or less, leafy, glabrous: leaves numerous, sessile, ligulate-oblanceolate, obtusish, 3 or 4 lines long: flowers shortly pedicellate in loose spreading cymes: sepals oblong, obtuse, 2 lines long; petals purple, linear-lanceolate, obtuse, 3 to 3½ lines long: stamens included, the scales very short and truncate-flabelliform: carpels equalling the petals, acuminate with the slender styles, becoming divaricately divergent. — On dry ledges in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1241), Oct., 1887.

Sedum puberulum. Rough-puberulent throughout; stems from a dense cluster of fibrous and fleshy roots, slender, simple or once forked, 1 to 3 inches high: leaves sessile, oblong or the upper linear-oblong, acute or acutish, 3 to 5 lines long: flowers few, sessile or shortly pedicellate; sepals narrowly oblong, 2 or 3 lines long; petals white, oblanceolate, acute, 3 lines long, scarcely exceeding the stamens; scales short, quadrangular: carpels erect, acuminate with slender styles. — On shaded cliffs in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1242), Oct., 1887.

Rotala Mexicana, Cham. & Schlecht. The leaves all opposite and the calyx appendaged at the sinuses. — In wet places on the plains near Guerrero, Chihuahua; C. G. Pringle (n. 1365), Sept., 1887.

Epilobium Madrense. Glabrous throughout and very glaucous; stems ascending from very slender rooting rhizomes, a span high or less, slender and somewhat flexuous, simple, terete or nearly so: leaves thickish, opposite (the floral alternate), petiolate, entire or obsoletely toothed, narrowly lanceolate or oblong-lanceolate, acutish, 6 to 12 lines long: flowers long-pedicellate; petals purple, 2 lines long, the lobes of the calyx scarcely half as long: capsule 1 to 1½ inches long: seeds oblong, obtuse, papillose. — With the habit of the *E. origanifolium* group; apparently not referrible to any of Haussknecht's species. In the Sierra Madre, Chihuahua; C. G. Pringle (n. 1245), 1887.

Sicyos (Heterosicyos) minimus. Small and very slender (stems 2 feet long or less), glabrous or nearly so: tendrils simple; leaves thin, shortly petiolate, ternately digitate, the lateral leaflets lobed on the lower side, the middle one narrowly lanceolate to linear, 1½ inches long or less, entire or sparingly toothed: male and female flowers in the same axils, minute, the male inflorescence few-flowered and much shorter than the petioles, the female flowers solitary or in pairs: fruit small (3 lines long), membranous, compressed, strongly gibbous and subtriangular, the ventral side straight, shortly beaked, sparingly covered with very short curved bristles: seed inverted, pendulous upon a funicle as long as the seed, ovate, somewhat rugose-tuberculate. — In cañons of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1576), Oct., 1887. Very peculiar in its thin pericarp, inverted long-funicular seed, and simple tendrils, and deserving at least sectional rank in the genus.

Eryngium Madrense. Erect, 2 feet high or more, branching above: lower leaves unknown; cauline bipinnatifid, 2 or 3 inches long, the rhachis and distant segments linear-subulate and spinulose; the uppermost subdigitately parted, the segments entire or toothed; involucral bracts about 8, linear-subulate, spinulose, entire or with 1 or 2 teeth, 4 to 8 lines long: head oblong (4 or 5 lines long by 2 or 3 broad), the axis prolonged and 2–5-cleft at top; floral bracts flattened-filiform, about equalling the flowers: fruit about ½ line long, ovate, crowned with the purple calyx and covered with white tubercles in about 12 rows. — In ponds on the plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1531), Oct., 1887.

Bowlesia palmata, Ruiz & Pavon. Under cliffs in cañons of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1248), Oct., 1887. Apparently agreeing in every respect with the descriptions of this Peruvian species, and with specimens collected in the Andes by Mr. Ball.

PRIONOSCIADIUM ; new genus of *Umbelliferæ*, near *Angelica*. Calyx-teeth very short, but nearly equalling or exceeding the depressed stylopodium. Fruit round-ovate, dorsally compressed, with a broad commissure ; lateral jugæ expanded into lateral wings, the intermediate and dorsal somewhat prominent or slightly winged; vittæ several in the intervals and on the commissure. Carpophore 2-parted. Seed dorsally compressed, the margins infolded. — Erect, caulescent, with ample twice or thrice pinnate or pinnatifid leaves and mostly lobed or decompound leaflets, and compound umbels with no involucres and small involucels. Distinguished from *Angelica* (*Archangelica*) chiefly by the infolded seed. The name has reference to the mountain habitat of Pringle's specimens (πρίων, a saw, sierra).

PRIONOSCIADIUM MADRENSE. Perennial (?), 2 or 3 feet high, much branched, glabrous excepting the somewhat scabrous petioles and inflorescence : petioles shortly dilated at base; lower leaves thrice pinnate, the uppermost simply pinnate ; leaflets lanceolate in outline, pinnatifid with rather small incised segments : peduncles short ; umbels 6–10-rayed, the rays about an inch long; involucels of a few linear acuminate bracts ; pedicels 1 to 3 lines long : fruit glabrous, 3½ to 5 lines long by 2½ to 3½ broad, the wings nearly as broad as the seed; vittæ in the intervals 3, very narrow and irregular, on the commissure 6, broad and thick. — On ledges of a river cañon near Guerrero, Chihuahua ; C. G. Pringle (n. 1251), Sept. and Oct., 1887.

PRIONOSCIADIUM MEXICANUM. Stout and tall, the foliage and inflorescence subpubescent : leaves ternate and compoundly pinnate or pinnatifid, the ultimate segments large, oblong or lanceolate, subcrenately toothed and mostly lobed : peduncles verticillately panicled ; rays 12 to 20, an inch long or less ; involucels of a few linear acuminate bracts ; pedicels very short (a line long or less) : fruit nearly orbicular (a little narrower above), retuse, cordate at base, glabrous, 4 to 6 lines long, the wings broader than the seed ; vittæ broad and nearly confluent, 3 in the intervals, 6 on the commissure. — *Angelica Mexicana*, Vatke, Ind. Sem. h. Berol. 1876, App. 2? The above description is drawn from Bourgeau's specimens from the valley of Mexico (n. 316, in flower, and n. 571, in fruit). Vatke's species was founded on specimens collected by Hahn in the valley of Mexico (n. 13, in fruit) and by Ehrenberg (n. 186) at Mineral del Monte. His description applies so closely to Bourgeau's specimens that the identity can scarcely be doubted, though the fruit is said to be that of a true *Angelica* and to have the intervallecular vittæ solitary and somewhat obscure.

Prionosciadium Pringlei. Resembling the last in habit and foliage, rather more pubescent and the segments of the leaves more acutely toothed: fruit somewhat pubescent, on pedicels 1 or 2 lines long, oblong-elliptical, 4 or 5 lines long by 2½ or 3 broad, narrower below and scarcely at all retuse or cordate, the wings mostly narrower than the seed: vittæ broad and thin, 3 in the intervals, 6 on the commissure. — In the shade of cliffs on the Mapula Mountains (n. 1137) and on shaded slopes of La Bufa Mountain above Cusihuiriachic, Chihuahua (n. 1249); C. G. Pringle, Oct., 1886, and Sept., 1887. Distributed as *Angelica Mexicana*.

Eulophus tenuifolius. Glabrous; stems ascending, surrounded at base by the fibrous remains of old petioles, mostly simple, a foot high or more: leaves mostly radical, long-petioled, thrice pinnate, the linear leaflets very narrow, 2 to 5 lines long; solitary cauline leaf small, on a short dilated petiole: rays usually 10, about an inch long; involucels of several laciniately cleft bracts, mostly adnate to the short pedicels: flowers yellow: fruit ovate, acutish, 2 lines long or more; ribs slightly prominent; carpophore bifid or entire; vittæ numerous: seeds strongly lunate and deeply channelled. — In cañons of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1518), Oct., 1887.

Eulophus ternatus. Glabrous and glaucous; stem erect, much branched: radical leaves biternate, the leaflets very narrowly linear, entire, 1½ or 2 inches long or more; cauline leaves mostly ternate or the upper simple: umbels long-pedunculate, or the lateral often sessile, few- (usually 5-) rayed, the terminal involucrate with 1 or 2 long linear bracts; involucels none: flowers yellow: fruit round-ovate, obtuse, 1½ lines long; ribs obsolete; carpophore 2-parted; vittæ very numerous: seed deeply and broadly channelled. — Pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1252), Sept., 1887.

Stevia Pringlei. Perennial, the herbaceous stems a foot high, simple above the branching base, purplish, sparingly appressed-pubescent: leaves approximate, mostly alternate (the lower only opposite), sessile, glabrous, linear (or the lower on the main stem oblong to oblong-ovate), obtuse, entire, about an inch long: heads few, on slender peduncles in a loose corymb; involucre slightly puberulent, purplish, 3 or 4 lines long: corollas pale purple, 5 or 6 lines long: achene puberulent, the pappus exaristate, short and coroniform, the paleæ somewhat connate. — Apparently near to *S. pilosa*, Lag. Foothills of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1301), Sept., 1887.

Aplopappus (Stenotus) niveus. Caudex much branched, the herbaceous leafy ascending or decumbent stems 6 inches long and equalling the naked peduncle, white floccose-woolly throughout: leaves spatulate, 1 or 2 inches long by 3 to 9 lines broad, obtuse: peduncle 1-flowered, somewhat glandular-scabrous above; heads 6 lines long; involucre glandular-scabrous, not tomentose, of narrow acuminate bracts in 3 or 4 unequal rows: rays about 20, deep orange: achenes white-silky. — Gravelly borders of streams in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1300), Sept., 1887.

Sanvitalia tenuis. Annual, erect, a span high or less, slender, branching, rather sparingly rough-pubescent: leaves linear, $\frac{1}{2}$ to 1 inch long, sessile, entire: heads small, sessile, the turbinate-campanulate to hemispherical involucres 2 lines high, of 1 or 2 series of thin obovate obtuse nearly equal bracts; receptacle small, depressed-conical, the chaff thin and that of the disk conduplicate: ligules very short, cuneate-obovate, 3-toothed; disk-flowers yellow becoming brown: achenes nearly alike in ray and disk, with two very slender deciduous awns or none, those of the ray usually more or less granular, of the disk with a thinner membranous margin. — In the Sierra Madre, Chihuahua, at 7–8,000 feet altitude; C. G. Pringle (n. 1304), Sept., 1887.

Siegesbeckia orientalis, Linn. A variety of this widely distributed species with small heads and very obtusely angled oblong-obovate achenes. — At Arroyo Aucho in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1283), Oct., 1887.

Sabazia glabra. Glabrous throughout, branching from the base upward, a span high, lax: leaves entire, linear-oblong, obtuse, attenuate to a short petiole, 1 to $1\frac{1}{2}$ inches long: peduncles 1-flowered, exceeding the leaves; outer involucre of 12 to 15 equal thin-herbaceous bracts, the inner embracing the achenes of the ray: ligules conspicuous, 3 or 4 lines long, rather broadly linear, 2–3-toothed, yellow toward the base, white or pinkish above: receptacle convex, broad. — In shallow water on the pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1295), Sept., 1887. The concave inner bracts of the involucre would refer this species strictly to *Jaegeria*, but in other respects it agrees better with *Sabazia*.

Lepachys (Obeliscaria) Mexicana. Rough with a short spreading pubescence and somewhat hirsute, 2 feet high: lower leaves lanceolate, attenuate to a long petiole, acuminate, subcrenately toothed, the cauline pinnatifid with a few short spreading segments: heads long-pedunculate, 1 to $1\frac{1}{2}$ inches long: rays yellow, narrowly oblong-spatulate, 15 lines long: achenes epappose, with obtuse naked margins, and

somewhat ribbed on the face. — On cool slopes of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1305), Sept., 1887.

Helianthella Madrensis. Root thick and fleshy: stems sparingly pubescent or glabrate, nearly naked, 2 feet high, bearing 3 to 5 long-pedunculate flowers: leaves mostly radical, linear and long-petiolate, acute or acuminate, 4 to 10 inches long (cauline much shorter), entire, glabrous above, subscabrous beneath: heads rather small (5 or 6 lines high); involucre finely pubescent, the bracts strongly 3–7-nerved: ray-flowers 9 lines long: chaff thin and scarious: pappus of 2 short slender awns and numerous dissected squamulæ. — On pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1302), September, 1887. Allied to *H. Mexicana.*

Bidens inermis. Annual, slender, branching, 2 feet high, hirsutely scabrous throughout: leaves ternately divided, the divisions ternately or pinnately cleft into broadly linear segments, the terminal one elongated: peduncles slender; involucre hirsute, the outer bracts narrowly linear, obtuse, the inner linear, acuminate, twice longer: ray white faintly veined with purple, 5 lines long, neutral: achenes numerous, unequal, very slender, mostly long-attenuate and 6 lines long, scabrous above, awnless. — On rocky ledges in thin soil, Arroyo Aucho, in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1291), Oct., 1887. Nearly allied to *B. tenuisecta*, but the achenes awnless as in *B. exaristata.*

Schkuhria (Euschkuhria) Pringlei. With the habit of the genus, the leaves pinnately 3–7-parted with narrowly linear divisions, the uppermost entire: bracts of the involucre obtuse, with scarious yellow tips: flowers yellow: achenes (9) narrow, nearly 2 lines long, slightly hairy on the angles; pappus of very short unequal blunt nerveless scales, the longer scarcely half the length of the glandular base of the corolla. — In moist places on the plains near Guerrero, Chihuahua; C. G. Pringle (n. 1292), Sept., 1887.

Hymenothrix glandulosa. Annual or biennial, pubescent with spreading gland-tipped hairs, 2 feet high or more: leaves twice or thrice pinnate, the segments linear, obtuse: heads cymose; involucral bracts yellowish and somewhat scarious-margined: rays none; corolla of the disk-flowers with a dilated deeply lobed limb: achenes rather broadly obpyramidal and prominently angled, somewhat pubescent and hairy on the angles; pappus-scales very short and blunt, unequal, nerveless, not half the length of the glandular-hispid corolla-tube. — By springs in the Sierra Madre, Chihuahua, at 9,000 feet altitude;

C. G. Pringle (n. 1293), Oct., 1887. In the character of the pappus this species approaches *Bahia* still more nearly than does *H. Palmeri*.

TAGETES PRINGLEI. Annual, erect and branching, 2 feet high or more, glabrous: leaves simple, linear, serrate, ciliate toward the base, 2 or 3 inches long: heads few in the open cymes; involucres somewhat turgid, contracted and punctate above, with 5 blunt or apiculate teeth: flowers included, the 2 yellow rays scarcely exceeding the involucre: achenes linear, scarcely scabrous on the angles; awns 2 or 3, equalling the corolla or one shorter, the 2 or 3 paleæ short and blunt. — In wet places on the pine plains at base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1297), Sept., 1887. Allied to *T. lucida*.

PECTIS AQUATICA. Growing in shallow water, the floating stems a foot long, sparingly leafy and branched at top, glabrous and sparingly punctate: leaves linear, entire, not setose, an inch long: heads few and sessile or nearly so; involucre 3 to 5 lines long, of 5 imbricate obtuse purple-tipped bracts: flowers (about 12) included or nearly so; rays none: achenes very slender, with long-attenuate base, 3 or 4 lines long; pappus of 10 or 12 unequal scabrous bristles, the longest shorter than the corolla. — On pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1296), Sept., 1887. A true *Pectis*, but of peculiar habit and the leaves wanting the usual ciliate bristles.

ARTEMISIA DRACUNCULINA. Closely resembling *A. Dracunculus* and *A. dracunculoides:* stem and leaves more or less villous with soft spreading hairs: leaves linear, entire or the cauline 3-cleft, 1 to $2\frac{1}{2}$ inches long: panicle very loose, the heads (mostly ascending) on filiform peduncles 2 to 4 lines long; involucre nearly glabrous: sterile flowers numerous, the styles long-exserted. — At the base of cliffs in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1309), Oct., 1887. The whole plant, and especially the roots, have a decided odor.

SENECIO UMBRACULIFERA. Densely and closely white-tomentose throughout, perennial, the stems erect from a horizontal rootstock, $1\frac{1}{2}$ feet high: basal leaves linear-oblanceolate or linear, acute or acutish, attenuate to a short petiole, entire, 3 to 7 inches long, the cauline scarcely shorter, few (3 or 4), linear-lanceolate, sessile: heads approximate in a close cymose panicle, rather small, radiate; involucre narrowly campanulate, the bracts (10) 3 or 4 lines long: rays 5 or 6: achenes canescent. — Summits of the Sierra Madre, Chihuahua, at 9,700 feet altitude; C. G. Pringle (n. 1316), Oct., 1887. Near *S. fastigiatus*.

Senecio Chihuahuensis. Perennial (?), the purplish leafy subpubescent stem 1½ feet high, branching at the top: leaves thin, somewhat white-tomentose when young, glabrescent, the basal oblanceolate and coarsely toothed, 2 inches long, the cauline 2 to 4 inches long, ovate to oblong in outline, nearly sessile, pinnately divided, the narrow lobes usually sparingly pinnatifid or in the smaller leaves entire: inflorescence cymose: involucre calyculate, nearly glabrous, cylindric-campanulate, 3 or 4 lines long; bracts 12, linear, tipped with brown: rays 6 or 8, 4 lines long: achenes canescent. — On ledges of the Sierra Madre, Chihuahua, at 9,700 feet altitude, under *Populus tremuloides*; C. G. Pringle (n. 1318), Oct., 1887. Most nearly related to some forms of *S. Douglasii*.

Heterotoma gibbosa. Low and very slender, branching from the base, glabrous: leaves mostly radical, oblong-ovate, attenuate to a short ciliate petiole, coarsely toothed, an inch long; cauline 1 or 2, ovate, sessile, dentate: flowers on long slender pedicels, small (4 lines long); calyx very oblique; corolla blue with a greenish throat, the tube more or less gibbous at base but not at all calcarate, the upper lobe of the limb rounded, the lateral broadly oblong. — Banks of brooks, Ortiz, Chihuahua; C. G. Pringle (n. 1478), May, 1887.

Polemonium pauciflorum. Perennial, a foot high or less, branching and leafy, glandular-pubescent: leaflets 6 to 12 pairs, narrowly lanceolate, acute, 9 lines long or less: flowers solitary or very few at the ends of the branches, on pedicels an inch long or less; calyx 6 lines long, the linear teeth longer than the campanulate tube; corolla yellow tinged with red, 1½ inches long, funnelform, the rather broad tube but little dilated above, the lobes broad, acute, 4 lines long: filaments declined, inserted near the base of the tube, the dilated appendage at the base pilose-bearded: capsule ovate, few-seeded, little exceeding the calyx-tube. — On shaded ledges in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1558), Oct., 1887. A true *Polemonium* though peculiar in the form and color of the corolla.

Ipomœa leptosiphon. Glabrous; stems very slender, from a narrow constricted tuber, branching and twining, 2 or 3 feet long: leaves shortly petiolate, digitately divided, the divisions very narrowly linear, 2 inches long or less and not ½ line wide: peduncles 1-flowered, about equalling the petiole: sepals unequal, oblong-lanceolate, acutish, the outer somewhat muricate, 4 or 5 lines long; corolla white or pinkish, nearly 4 inches long, funnelform with a long narrow tube: capsule ovate-globose, nearly equalling the calyx. — In thin gravelly soil on the foothills of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1537),

Sept., 1887. Resembling the *I. muricata* group, but the stem is evidently twining.

Ipomœa Madrensis. Glabrous; stems from a small oblong tuber, short (a span long), erect or decumbent, simple or divided at base: leaves very shortly petiolate, narrowly oblong, acute or acutish, narrowed at base, entire or with a single linear lobe on each side, 2 inches long: peduncles 1-flowered, ½ inch long, scabrous, bibracteate in the middle and often geniculate; sepals ovate, acute or obtuse, more or less muricate, 3 or 4 lines long; corolla purple, 15 lines long, funnelform with a very broad tube, apiculate at the folds: capsule globose, a little shorter than the calyx. — On pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1338), Sept., 1887. Allied to *I. leptophylla.*

Breweria rotundifolia. Stems procumbent, herbaceous, several from a rather thick perennial (?) root, a span long or less, thinly pubescent: leaves round-ovate, 5 to 8 lines long, very obtuse or retuse, very shortly petiolate, glabrous above, silky-villous beneath: pedicels sessile in the axils, 1 or 2 lines long, shorter than the narrowly oblong acute bracts: sepals narrowly oblong, acute, nearly 2 lines long, equalling the globose capsule; corolla pale blue, open, 5 lines broad: filaments glabrous: styles distinct and divided to the base. — In damp places on the pine plains at base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1341), Sept., 1887. Allied to *B. ovalifolia.*

Pentstemon Pringlei. Near *P. Jamesii*, finely pubescent throughout, glandular above, a foot high or less: leaves narrowly oblong to lanceolate, obtuse or acutish, approximate, 1 to 1¾ inches long, the lowest attenuate at base: peduncles mostly short, 1–2-flowered: calyx herbaceous, the segments oblong to lanceolate, obtuse or acute, 2 or 3 lines long; corolla apparently reddish purple, an inch long, ampliate above: sterile filament naked; anthers short, not expanded, ciliate. — On hills near Santa Isabel, Chihuahua; C. G. Pringle (n. 1557), Aug., 1887. The anthers are those of the *Speciosi* group.

Veronica (Veronicastrum) Mexicana. Stem herbaceous from a perennial running rootstock, erect, branching, a foot high or more, finely pubescent: leaves sessile or the lower very shortly petiolate, oblong-lanceolate, acute, cuneate at base, acutely serrate, 1 to 1½ inches long, sparingly pubescent: racemes terminal, loose, the lower bracts foliaceous; pedicels slender, 3 or 4 lines long: calyx unequally 5-lobed, the lobes oblong, obtuse, 1½ lines long; corolla blue, rotate with a very short tube, 4-lobed, 4 lines long. — On cool damp bluffs of streams in the Sierra Madre, Chihuahua; C. G. Pringle

(n. 1349), Sept., 1887. A very peculiar species, with large bright blue flowers.

Priva Orizabæ. With the habit, foliage and pubescence of *P. hispida:* leaves more acutely dentate: flowers distinctly pedicelled, the pedicels mostly equalling the linear bracts: calyx finely puberulent, narrowly cylindrical, in fruit globose-didymous: fruit ascending; cocci 1-celled, 1-seeded. — About Orizaba, Mexico; 2950 and 3118 Bourgeau, and 593 Botteri in Herb. Gray. Clearly distinct from *P. hispida*, in which the leaves are crenately toothed, the subcampanulate calyx densely uncinate-hispid, and the fruit more or less reflexed upon the very short pedicels. This last species was collected in the valley of Mexico by Bourgeau (n. 359) and Schaffner (n. 425), and in Chihuahua by Mr. Pringle (n. 287 of his 1885 collection, distributed as *P. echinata*).

Microstylis Pringlei. Stem slender, over a foot high, from a round-tuberous base, 1-foliate: leaf narrowly oblong above the sheathing base, acute, 2 inches long: raceme elongated, loose; bracts green, triangular-subulate, equalling or shorter than the very slender pedicels (about a line long): flowers 1½ lines long, very narrow, greenish yellow; lateral sepals narrowly lanceolate and subfalcate, acuminate, contiguous behind the lip, the lower lanceolate with a broad base, reflexed against the ovary; petals nearly filiform, much shorter, coiled backward; lip triangular-hastate, obtusish, a line long, with a dull brownish line near each margin; basal auricles oblong: ovary minute, mostly reflexed on the ascending pedicel. — On shaded gravel banks in the Sierra Madre, Chihuahua; C. G. Pringle (n. 1369), Oct., 1887. Near *M. ocreata*.

Microstylis crispata, Reich. f.? A rather stout species, a foot high, with 2 or 3 oblong very acute or acutish loosely sheathing leaves about 4 inches long: raceme elongated (4 to 7 inches long) with numerous crowded flowers; bracts deltoid, acute, nearly equalling the very short thick erect pedicels: flowers greenish yellow; sepals oblong-ovate, obtuse, the margins revolute, the upper narrower, over a line long; petals linear, as long; lip cordate and concave-saccate, the pinkish acute apex thickened and cucullate: ovary and capsule strongly crispate-angled, the latter three lines long. — In cool damp soil in the Sierra Madre; C. G. Pringle (n. 1371), Sept., 1887. *M. crispata* is referred by Mr. Ridley, in his recent revision of the genus, to *M. myurus*, and he must have examined Hartweg's specimen in Herb. Kew upon which the species was founded, though he does not mention it in his paper. Mr. Pringle's specimens are nevertheless so

named at a venture, simply because they do not agree with the descriptions of *M. myurus*, upon the double chance of their being identical with Hartweg's plant and its yet proving to be a good species.

Habenaria Schaffneri. Stem stout, 8 inches high, covered with imbricated ovate or ovate-lanceolate sheathing, acute or acuminate leaves 1 to 1½ inches long: bracts large, foliaceous, much exceeding the ovary; raceme short, few- (6–8-) flowered: flowers large, 5 or 6 lines long; lower sepals lanceolate, acutish, the upper broadly elliptical, obtuse, carinate; petals 2-parted, the lower segments very narrow, the upper oblong-falcate, contiguous or subcoherent to the sepal; lip 3-lobed above the base, 5 lines long, the middle lobe narrowly ligulate, the lateral narrowly linear; spur an inch long or more, dilated toward the end and very acuminate: oblong processes of the stigma and beaks of the anther 1½ lines long. — In the San Miguelito Mountains (5088 Schaffner, 1876) and near San Luis Potosi (860 Parry and Palmer, 1878); under pines in the Sierra Madre, Chihuahua (1375[a] Pringle, Sept., 1887).

Calochortus Madrensis. Bulb small, fibrous-coated; stem very slender, a span high or less, not bulbiferous: leaves narrowly linear, equalling or shorter than the stem: flowers small, erect, orange-yellow; sepals oblong, obtuse, apiculate, 6 lines long, naked and spotless; petals as long, cuneate-obovate, rounded above or barely acutish, entire or denticulate, with a band of orange-colored hairs above the base, the nectary ill-defined or obsolete: anthers a line long, obtuse: capsule linear, 1 to 1¾ inches long. — On pine plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1382), Sept., 1887.

Eriocaulon Pringlei. Annual, very low and delicate: leaves filiform, terete or semiterete, nerveless, 9 lines long or less: scapes very slender, 1½ inches long or less, with loose pellucid nerveless sheaths: heads small (less than a line broad) and few-flowered, fuliginous, glabrous; bracts erect, obtuse, the inner narrow and acute: flowers trimerous. — On plains at the base of the Sierra Madre, Chihuahua; C. G. Pringle (n. 1533), Sept., 1887.

3. *Descriptions of some Plants of Guatemala.*

LOUTERIDIUM; new genus of *Acanthaceæ*, tribe *Ruellieæ*. Calyx herbaceous, the upper sepals distinct, the 3 lower united to the apex, these 3 divisions nearly equal, acute. Corolla-tube very short, ab-

ruptly expanded into the large exceedingly oblique gibbous-campanulate throat; limb convolute in the bud, subequally 5-lobed, the lobes short. Stamens 2, exserted, inserted upon the tube, membranously dilated and subpubescent below, each connate with a very short obtuse staminodium; anthers oblong, dorsifixed, glabrous, the cells parallel. Capsule sessile, subtetragonal and somewhat dorsally compressed; cells 6–8-seeded. Seeds orbicular, flat, borne by stout acute retinaenla, alternating in 2 rows in each cell. — A tall pubescent shrub with ample ovate leaves. Flowers long-pedunculate in an erect nearly naked cyme. A strongly characterized genus, having the habit of some species of *Ruellia*, but with the lower sepals united into one, two exserted stamens, and the corolla very oblique and inflated. Named with reference to the form of the corolla.

Louteridium Donnell-Smithii. Twelve to fifteen feet high, sometimes arborescent, the younger branches, foliage and inflorescence soft-pubescent: leaves petiolate, ovate, acute, subcordate at base, finely crenate, 6 to 10 inches long by 4 to 6 wide: cyme a foot long or more; peduncles 3 or 4 inches long, jointed below the middle; bracts and bractlets very small or deciduous: divisions of the calyx oblong-lanceolate, usually acute or acuminate, an inch becoming 1½ inches long; corolla-tube broad, 4 lines long, the saccately inflated gibbous throat (color indeterminate) an inch deep and nearly 1½ inches broad, the somewhat contracted orifice bordered by the narrow spreading or at length revolute limb: stamens and style long-exserted: capsule narrowly oblong, an inch long: seeds 2 lines broad. — Near Pansamala in the department of Alta Vera Paz, Guatemala, at 3,800 feet altitude: Türckheim (n. 856), May, 1887. Communicated by John Donnell Smith, Esq., of Baltimore, well known as a zealous botanist, who is making a careful study of Türckheim's collections from central Guatemala.

Heliconia Choconiana. Glabrous throughout; stems about 3 feet high, sheathed with numerous leaves, the blades of which are sessile upon the sheaths, linear-oblong (6 to 10 inches long by about 2 broad), acuminate, green and shining: inflorescence deflexed upon the very short peduncle, the rhachis flexuous; spathes (5 or 6) scarlet, lanceolate, acuminate, about 2 inches long, the lower one empty and usually leafy-tipped: flowers yellowish white, 2 inches long; lower sepal free, the lateral connate with the petals: sterile stamen ovate, abruptly acuminate. — In the Chocon forests at the foot of limestone hills, March, 1885; in flower at Cambridge, March, 1887.

Pleurothallis Blaisdellii. Stem slender, about 2 inches long,

angled, hispid, sheathed with 4 to 7 obliquely truncate funnelform acute nerved bracts, the terminal one sheathing the base of the solitary leaf and of the nearly sessile raceme: leaf oblong, nearly sessile, 1 or 2 inches long, acute at base, 3-denticulate at the apex, dark green, purplish beneath, 5-nerved, the outer nerve marginal: raceme usually solitary, about 6-flowered, much shorter than the leaf; pedicels very short, equalling the sheathing bracts: sepals brown-purple, 2 lines long, somewhat spreading, fleshy, oblong, acutish, the lower united to the middle; petals nearly equalling the column, thin, ciliate, broad-oblong, obtusish, brownish above; lip somewhat longer, ligulate, ciliate, dark brown, not crested: column yellowish, narrow below, broadly winged above, the wings and crest ciliate-lacerate. — Chocon forests; described from plants in flower at Cambridge, November, 1887. Named in memory of Mr. Frank E. Blaisdell, the energetic young manager of the plantation of the "Tropical Products Company" upon the Chocon, to whom I was much indebted for assistance during my visit there in 1885.

Pleurothallis Choconiana. Of the *Apodæ cæspitosæ* group: stems numerous, very short (1 or 2 lines) and slender, bearing a peduncle from the joint below the single leaf: leaf deep green (somewhat cæsious), oblong-oblanceolate, attenuate to a slender petiole, acute or obtusish and minutely bidentate at the apex, thick-margined, smooth above, many-striate beneath, ½ to 1 inch long: peduncle filiform, 2 to 4 inches long, 4–6 flowered; bracts minute; pedicels 1 to 3 lines long: lower sepals united very nearly to the apex, oblong-lanceolate, gibbous and subsaccate at base, yellowish, faintly 4-nerved, 3 or 4 lines long, the upper somewhat shorter, lanceolate, acuminate, yellowish with 3 brownish nerves; petals equalling the column, oblong, acutish, pale yellow with brown midnerve; lip somewhat longer, ligulate, entire, obtuse, channelled, yellowish with 2 or 3 brown nerves: column white, narrowly winged, 2-calloused at the articulation with the lip. — In the Chocon forests and at the ruins of Quirigua, March and April, 1885. Described from plants in bloom at Cambridge, July, 1887.

Pleurothallis Brighami. Of the same group; stems very slender and closely cespitose: leaves bright green and shining on both sides, not striate nor margined, oblanceolate, acute and bidentate at the apex, attenuate at base, 1 or 2 inches long: peduncle filiform, equalling the leaf, usually 1-flowered; bracts sheathing, acuminate, 2½ lines long; pedicel 4 lines long: lateral sepals united to above the middle, somewhat gibbous, oblong, shortly acuminate, carinate, 4 lines

long, brown at base, yellowish above with 3 strong brown nerves; upper sepal oblong, acute, yellowish with brown nerves; petals spatulate, acutish, yellowish with a brown midnerve, equalling the green and brownish column (a line long); lip narrowly ligulate, dark brown. — On trees in the Chocon forests; described from plants in flower at Cambridge, August, 1887.

Pleurothallis minutiflora. Of the same group; cespitose, the stems very short and slender: leaves rather narrowly elliptical, 3-toothed at the apex, attenuate to the slender more or less elongated petiole, bright green, faintly margined and faintly few-nerved, the blade about an inch long: peduncle very short and slender from below the base of the leaf, the 3–6-flowered raceme about equalling the petiole; bracts ovate, acute, sheathing; pedicels a line long: perianth pale yellow, spreading; sepals lanceolate, $\frac{2}{3}$ line long, the lower united to below the middle, subfalcate, acuminate, nerveless, the upper acute, faintly 1-nerved; petals linear-lanceolate, acuminate, a little shorter; lip thick and fleshy, broadly ligulate, papillose, orange-colored: column broadly winged. — Chocon forests; described from plants in flower at Cambridge, August, 1887.

Scaphyglottis longicaulis. Stems densely clustered, terete and slender, scarcely enlarged above the short slender base, the joints (the lower 4 inches long) covered below by a close thin whitish sheath: leaves linear and grass-like, 2 to 4 inches long by 1 to $1\frac{1}{2}$ lines wide: flowers solitary or few, on short slender pedicels, the narrow ovary 6 lines long: sepals connivent, purplish, channelled, 3 lines long, the lower linear-oblong, broadening upward and obliquely truncate with a short lateral acumination, strongly gibbous at base, the upper linear-oblanceolate; petals apparently wanting; lip equalling and resembling the upper sepal but dilated toward the summit and broadly 3-lobed, the lateral lobes very thin, pale and incurved: column narrowly margined, whitish, nearly equalling the sepals. — From the Chocon forests; in flower at Cambridge, November, 1887.

Maxillaria Yzabalana. Of the *Acaules* section; pseudobulbs compressed-globose, smooth, 1 to 2 inches in diameter, bearing a single flat coriaceous leaf complicate at base into a petiole $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, the blade 4 to 10 inches long by $\frac{1}{2}$ to $1\frac{1}{2}$ broad, acute: flower fragrant, subdeclinate, the pedicel and ovary covered by 3 or 4 ovate imbricated greenish bracts 9 lines long: perianth connivent, the narrowly oblong acute sepals 12 to 14 lines long, orange within, greenish yellow without, scarcely exceeding the white narrowly lanceolate acute petals; lip half as long, oblong, somewhat lobed, the thin lateral lobes

veined with purple, the thick middle lobe yellowish with an orange centre and a purple spot without on each side near the undulate margin: column white, shorter than the lip, margined. — In the forests of the Rio Dulce; in flower at Cambridge, November, 1887.

Among other orchids brought by me from eastern Guatemala, which have flowered at Cambridge, have been *Restrepia peduncularis*, Benth., *Stelis ciliaris*, Lindl., a variety (?) of *Gongora quinquenervis*, Ruiz & Pavon, *Diacrium bigibberosum*, Benth. & Hook., *Epidendrum alatum*, Batem., *E. aciculare*, Batem., *E. cochleatum*, Linn., *E. nocturnum*, Linn., *Schomburgkia tibicinis*, Batem., and variety, *Oncidium luridum*, Lindl., *Catasetum maculatum*, Kunth, *Cycnoches ventricosum*, Batem., *Lycaste aromatica*, Lindl., *Chysis lævis*, Batem., etc.

* * *

Gymnolomia triloba, Gray. This species has been distributed under the name of *Zaluzania triloba*, Pers., in Mr. Pringle's collections of 1886 (n. 755) and 1887 (n. 1310).

INDEX.

Alyssum, 250.
Aplopappus, 277.
Artemisia, 279.
Astragalus, 262, 270.

Bidens, 278.
Bowlesia, 274.
Breweria, 281.
Brodiæa, 266.
Brongniartia, 271.

Calandrinia, 262.
Calochortus, 266, 283.
Catasetum, 287.
Caulanthus, 261.
Ceanothus, 270.
Cerastium, 269.
Chaptalia, 265.
Cheiranthus, 261.
Chysis, 287.
Cologania, 271.
Cycnoches, 287.

Delphinium, 268.
Desmodium, 271.
Diacrium, 287.
Draba, 255.

Epidendrum, 287.
Epilobium, 274.
Eriocaulon, 283.
Eriogonum, 265.
Erophila, 255.
Eryngium, 274.
Erysimum, 261.
Eulophus, 276.

Gongora, 287.
Gymnolomia, 287.

Habenaria, 283.
Hartwrightia, 264.
Helianthella, 277.
Helianthemum, 268.
Heliconia, 284.
Heterodraba, 256.
Heterotoma, 280.
Hibiscus, 269.
Hosackia, 270
Hymenothrix, 278.

Ipomœa, 280
Ivesia, 263.

Juncus, 267.

Lathyrus, 263.
Lepachys, 277.
Lesquerella, 249.
Leucæna, 272.
Linum, 269.
Louteridium, 283.
Lupinus, 270.
Lycaste, 287.

Malvastrum, 269.
Maxillaria, 286.
Microstylis, 282.

Oncidium, 287.

Pectis, 279.
Pentstemon, 265, 281.
Pithecolobium, 272.
Pleurothallis, 284.
Polemonium, 280.
Potentilla, 272.
Prionosciadium, 275.
Priva, 282.
Pyrus, 263.

Restrepia, 287.
Rotala, 273.

Sabazia, 277.
Sanvitalia, 277.
Saxifraga, 264.
Scaphyglottis, 286.
Schkuhria, 278.
Schomburgkia, 287.
Sedum, 273.
Senecio, 279.
Sicyos, 274.
Sidalcea, 262.
Siegesbeckia, 277.
Silene, 261, 269.
Stelis, 287.
Stevia, 276.

Tagetes, 279.
Thalictrum, 267.
Tillæa, 272.
Tillandsia, 266.
Trifolium, 262.

Veronica, 281.
Vesicaria, 249.

Zaluzania, 287.